Feb. 27, 1968 T. B. FALK 3,370,531

RACK AND PINION ZIP CODE STAMPER

Filed Nov. 1, 1966 2 Sheets-Sheet 1

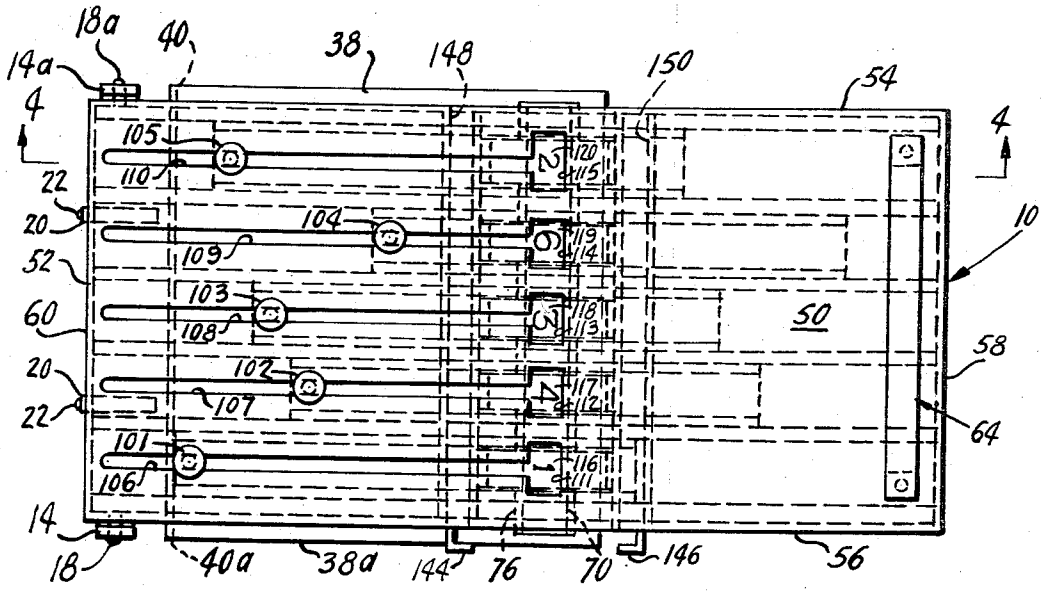


FIG. 1

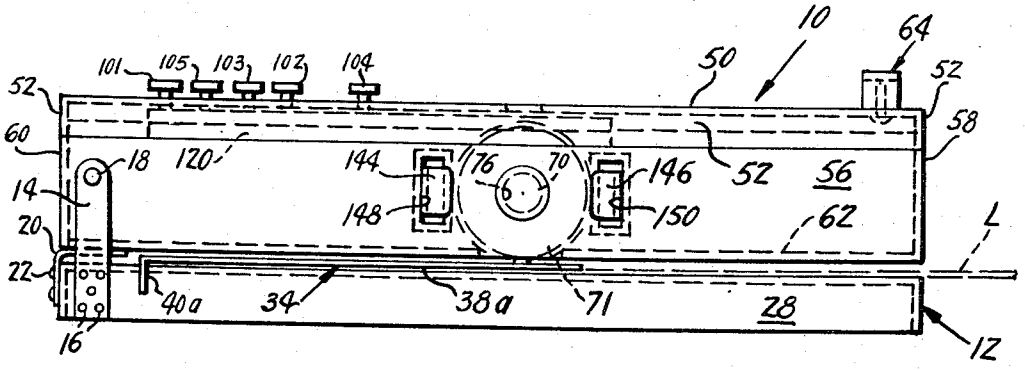


FIG. 2

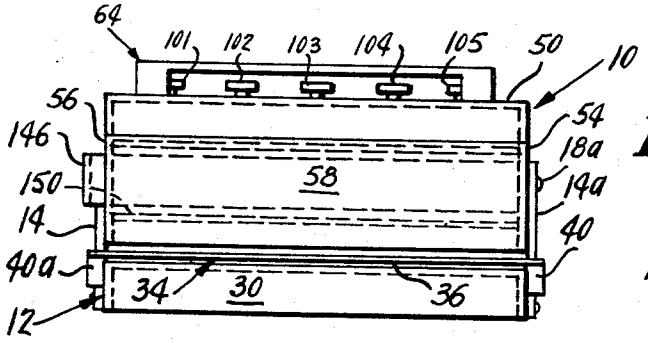


FIG. 3

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Feb. 27, 1968 T. B. FALK 3,370,531

RACK AND PINION ZIP CODE STAMPER

Filed Nov. 1, 1966 2 Sheets-Sheet 2

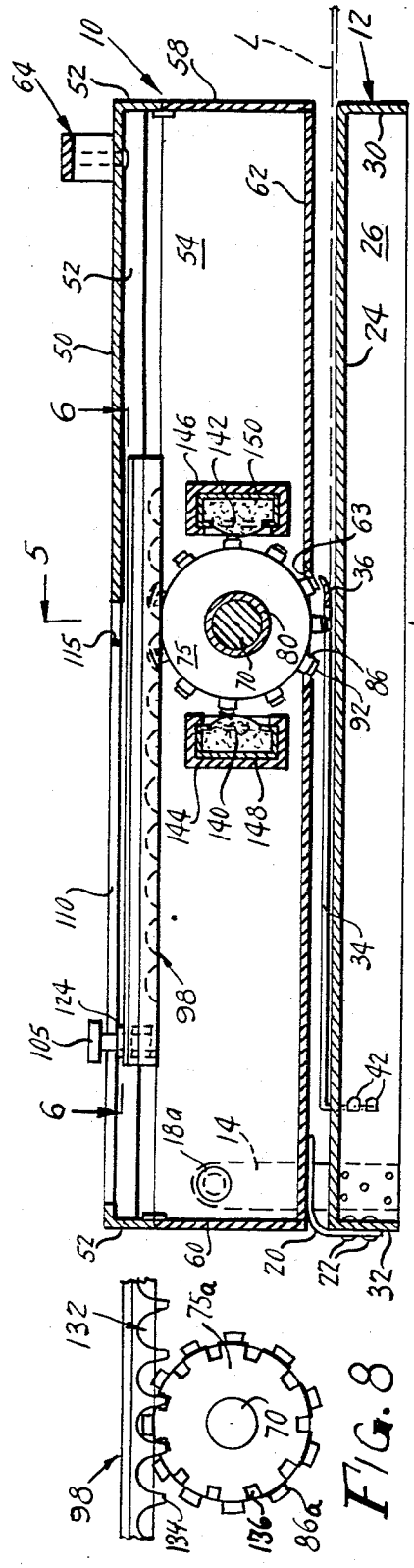


FIG. 4

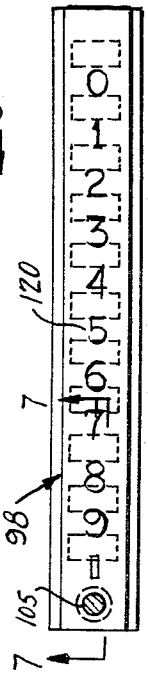


FIG. 6

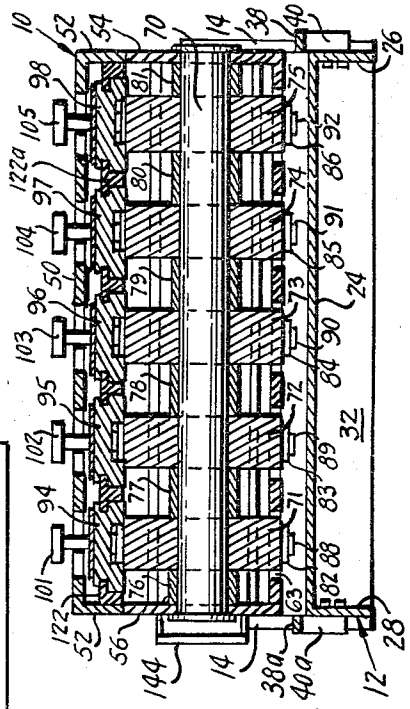


FIG. 5

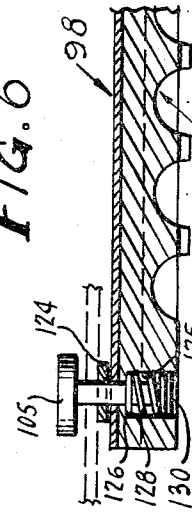


FIG. 7

FIG. 8

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United States Patent Office 3,370,531 Patented Feb. 27, 1968

3,370,531

RACK AND PINION ZIP CODE STAMPER

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Filed Nov. 1, 1966, Ser. No. 591,256
1 Claim. (Cl. 101—95)

ABSTRACT OF THE DISCLOSURE

A ZIP code stamper having a rectangular flat base to which a rectangular flat impressing unit is pivotally mounted, the impressing unit having a plurality of pinion wheels with type thereon, racks in the impressing unit for rotating the pinion wheels, a pair of opposed ink pads for inking the type just prior to movement of the type to an impressing position by the rack bars, a pair of fingers secured to the sides of the base platform extending forwardly to resiliently engage a letter and depress it and to position the letter for receiving the ZIP code in a selected portion, and a pair of leaf springs resiliently biasing the impressing unit above the base platform is disclosed.

This invention relates to a stamping device for impressing ZIP code numbers upon letters and similar articles. More specifically, this invention relates to an easily portable, conveniently operable stamping device including a plurality of pinion wheels carrying typed numerals thereon and a plurality of rack bars in operative engagement with the pinion wheels. This invention constitutes an improvement and a variation of the ZIP code stamper described in my copending application Ser. No. 574,083, filed Aug. 22, 1966.

As discussed in my previous application, the introduction, by the Post Office Department, of a system of code numbers for identifying addressee locations, commonly known as "ZIP Codes," holds out the possibility of great savings of time and manpower in sorting mail. High-speed optical scanners, designed to read and sort incoming and outgoing printed or typed ZIP code mail at the rate of approximately 36,000 pieces an hour are being evaluated. Equipment of this type generally requires reasonably standardized printed or typed ZIP code numbers for its operation. There appears little likelihood that a reading machine capable of reading longhand will become available on the market in the foreseeable future. Experience indicates from check reading machines, used in banks, that reading speeds of such machines may be significantly increased by use of standardized numerals of a predetermined size, configuration and spacing. It is, therefore, an object of this invention to provide a ZIP code stamper which may be adapted to impress a ZIP code on an envelope, or a similar article, in a desired location with a given style, size and spacing of ZIP code numerals.

It is a further object of this invention to provide a ZIP code numeral impressing device which is inexpensive, conveniently carried or stored in the home or in the office.

An additional object is the provision of an easily manufactured, dependable and economical ZIP code stamper which may be generally made available to the public.

An additional object of this invention is the provision of a ZIP code stamper which may be utilized to impress ZIP codes on strips of adhesive tape, labels, and the like which may then subsequently be affixed to packages, parcels and other objects of large and unusual size and shape.

It is a further and important object of this invention to provide a novel type numeral carrier and operating mechanism.

An additional object of this invention is the provision of a rack and pinion numeral carrier mechanism constructed in an integral, unitary, conveniently handleable impressing unit having therein conveniently replaceable inking pads for the type numerals.

A further object of this invention is the provision of a novel ZIP code stamper having a base portion and a pivotally connected impressing unit which includes therein a rack and pinion type numeral mechanism.

Other objects of the invention are disclosed and stated in my previous application, Ser. No. 574,083.

In addition, further and important objects of the invention will become apparent from the description of the invention which follows and from the drawings to which reference is made.

In the drawings:

FIGURE 1 is a top plan view of the ZIP code stamper of this invention;

FIGURE 2 is a side elevational view of the inventive ZIP code stamper;

FIGURE 3 is a front elevational view of the ZIP code stamper;

FIGURE 4 is a side elevational view in cross section taken substantially along lines 4—4 in the direction of the arrows as shown in FIGURE 1;

FIGURE 5 is an end elevational view in cross section taken substantially along lines 5—5 in the direction of the arrows as shown in FIGURE 4;

FIGURE 6 is a top view of one of the rack bars of the invention taken substantially along lines 6—6 in the direction of the arrows as shown in FIGURE 4;

FIGURE 7 is a side elevational view in cross section showing the detailed construction of the rack bar of this invention taken substantially along lines 7—7 in the direction of the arrows as shown in FIGURE 6;

FIGURE 8 is a fragmentary side elevational view showing an alternative form of pinion wheel having notches for cooperation with the teeth of the rack bar.

With reference now to the figures in detail, the ZIP code stamper of this invention comprises a movable impressing unit **10** and a base portion **12**. The movable impressing unit **10** is pivotally mounted to the base unit **12** by means of a pair of upright members **14** secured by rivets **16** to the base portion and pins **18** which extend from the movable impressing unit **10** through apertures formed in the upper portions of upright members **14**. While the pivotal mounting arrangement just described is convenient, any arrangement for mounting the movable impressing unit above the base member may be used as desired.

In a preferred embodiment, a pair of leaf springs **20**, as best shown in FIGURES 2 and 4, are secured by rivets **22** to the base portion and resiliently bias the movable impressing unit **10** upwardly from the base portion **12**. Any convenient means may be used to bias the movable impressing unit above the base portion or, alternatively, the movable impressing unit may be utilized individually without connection to the base portion.

In a convenient embodiment, the base portion comprises a base platform sheet **24** to which are connected a pair of platform sides **26** and **28** and platform ends **30** and **32** which extend downwardly from the base platform sheet to support the latter.

A significant feature of this invention comprises a novel positioning guide for resiliently pressing a letter to the base platform and aiding in positioning of the letter. This positioning guide **34** comprises a cross member **36** which is connected between the end of a pair of resilient arms **38** which are connected at one end by means of downwardly extending fingers **40** and lugs **42** thereon to the platform sides **26** and **28**. While the cross member **36** is shown positioned immediately in front of and adjacent the impressing position, it will be understood that it may be located behind the impressing position or at any other

desired location. The resilient arms 38 serve to resiliently press a letter or the like, against the base portion to frictionally maintain a letter in a selected position.

While the movable impressing unit 10 is now described in terms of a specific embodiment and specific mechanisms, it will be realized that this embodiment is given as exemplary of the invention and is not intended to be limiting. The movable impressing unit 10 comprises a top cover plate 50 which includes a peripheral lip 52 extending downwardly therefrom. A pair of opposing side walls 54 and 56 and opposing front and back walls 58 and 60 are connected to each other to form a generally rectangular box. A bottom cover plate 62, which has formed therein a plurality of longitudinal slots 63, closes the bottom of the rectangular box formed by side walls 54 and 56 and front and back walls 58 and 60 while top cover plate 50 encloses the top of the box. An operating handle 64 may conveniently be mounted on the upper surface of top cover plate 50 for moving the impressing unit. The impressing mechanism of this invention comprises, in a desired embodiment, a shaft 70 which may be fixedly secured between side walls 54 and 56 transversely of the movable impressing unit on which are carried a plurality of rotatably mounted pinion wheels 71 through 75. The desired spacing between pinion wheels 71 through 75 may be obtained by providing wheels of desired width, or in a highly preferred embodiment, by providing a plurality of annular spacers 76 through 81 received about shaft 70. By use of these spacing means, any desired spacial arrangement between the pinion wheels may be obtained and varied merely by changing the particular spacers.

A highly important feature of the invention comprises the provision of a plurality of beveled cog gear teeth on each of the pinion wheels. Sets of such beveled cog gear teeth are indicated generally at 82 through 86. In a desired embodiment, eleven such beveled cog gear teeth may be provided on each of the pinion wheels. In a preferred embodiment of the invention, type numeral sets indicated generally at 88 through 92 are provided on each of the pinion wheels and, in a convenient and preferred arrangement, the type numerals are formed on the tops of the individual cog gear teeth. In one embodiment, numerals including zero and one through nine are provided and a blank space is provided in the event that fewer numerals are required than the number of pinion wheels.

The type numerals are conveniently in the form of Arabic numerals; however, as was pointed out in my previous application, the exact nature of the individual numerals is of no consequence. The term "numerals" in this application is used and intended in the general sense; that is, numerals would include any intelligible indicia, such as English or foreign letters or numerical indicia. Hereinafter and in the claims appended hereto the term "numerals" will be regarded as including any set of symbolic indicia. Therefore, it will be realized that the use of eleven beveled cog gear teeth is merely convenient for use of decimal system numerals and a greater or lesser number may be used for other sets of numerals. For example, 27 such teeth may conveniently be used where the English alphabet is being imprinted.

Positioned above the pinion wheels and in operative engagement with the gear teeth are a plurality of rack bars 94 through 98. It will be understood that rack bars 94 through 98 and pinion wheels 71 through 75 cooperate substantially in the conventional manner of a rack and pinion thereby permitting translatory motion of the rack bar to be converted into rotary motion of the pinion wheels for rotatably selecting a desired type numeral on the pinion wheels by translatory movement of the rack bar. Operation of the rack bar is conveniently performed by positioning knobs 101 through 105, which knobs comprise a part of the rack bar. The positioning knobs 101 through 105 extend, respectively, through slots 106 through 110 formed in top cover plate 50. Windows 111 through 115 are also formed in top cover plate 50 to

permit viewing of numeral indicia 116 through 120 which are carried on the upper surface of rack bars 94 through 98. A rack bar support frame 122 is provided which includes a plurality of finger extensions 122*a* which slidably mount the rack bars 94 through 98 for slidable, reciprocable movement in the movale impressing unit 10.

Means are provided for frictionally maintaining the position of the rack bars once they are set. This frictional retaining means is part of the rack bar and comprises as best shown in FIGURE 7, a washer 124 which in the exemplary figure, is secured to positioning knob 105 between the rack bar proper and the top cover plate 50. As shown in FIGURE 7, the rack bar includes therein an aperture 125 in which a floating washer 126 and a compression spring 128 are retained by keeper washer 130. Positioning knob 105 is slidably received in the upper portion of aperture 125, which in a preferred embodiment, may be of smaller size than the opening of the aperture in the bottom of the rack bar, and is resiliently biased upwardly by compression spring 128 thereby frictionally maintaining a portion of the rack bar, washer 124, in contact with the movable impressing unit for maintaining the set position of the rack bar. Other means on the rack bar for engaging the cog gear teeth may comprise a plurality of cog gear receiving notches 132, which in a preferred embodiment, may be generally arcuate depressions, as best shown in FIGURE 7. Alternatively, as seen in FIGURE 8, a plurality of rack bar teeth 134 may engage notches 136 between type numerals 86*a* on pinion wheel 75*a* to provide similar operation.

Inking means are provided in the movable impressing unit which may comprise a pair of ink pads 140 and 142 disposed generally on opposite sides of the pinion wheels for inking the numerals carried thereon when the pinion wheels are rotated in either direction. The ink pads 140 and 142 may be mounted in ink pad holders 144 and 146 which are slidably received and supported in a pair of support guides 148 and 150 which may be secured between side wall members 56 and 58. A pair of openings may be provided in side wall 56 to permit easy removal and insertion of ink pad holders 144 and 146.

The operation of the ZIP code stamper will be apparent from the foregoing description and from the drawings. Thus it will be seen that any desired type numeral may be positioned, and the particular type numeral selected indicated through windows in the top cover member, by sliding the rack bars reciprocably in the movable impressing unit by means of positioning knobs which extend through slots in the top cover of the movable impressing unit.

It will be understood that variations from the specific structures disclosed may be made in the light of the teachings of the specification without departing from the spirit of the invention. For example, it may, in some circumstances, be convenient to mount the movable impressing unit of this invention in the manner described in my previous application for reciprocable movement of the entire movable inking unit to a position for inking the type numerals and to a second position for impressing numerals on a letter or the like. In addition, it will be understood that the movable impressing unit may be used by itself without interconnection with any base unit. Furthermore, while it is a highly desirable and most advantageous feature of this invention to have the cog gear teeth and type numerals integrally formed in combination on the pinion wheels, the rack and pinion arrangement of this invention is not necessarily limited to such combinational features of the pinion wheel. Other variations and modifications within the spirit of the invention will also become apparent to those skilled in the art. This invention is intended to be limited only by the appended claim.

I claim:

1. A ZIP code stamper which, in combination, comprises:

a relatively flat generally rectangular base platform;

a guide secured to the base platform for resiliently

forcing a letter to be stamped toward an upper surface of the platform and for positioning the letter to receive a ZIP code at a designated portion, said guide comprising a pair of resilient fingers extending forwardly from a rear portion of the base platform;

an impressing unit of generally the same rectangular configuration as the base platform mounted at the rear end thereof to the rear end of the base platform for relative pivotal movement;

at least one spring secured to the base platform engaging the impressing unit to bias the latter away from the base platform;

a plurality of rotary type carrying pinion wheels supported along an axis intermediate the ends and transversely of the impressing unit;

a corresponding plurality of rack bars engaging the pinion wheels for rotatably positioning the pinion wheels, said rack bars including manual operating knobs and being wholly included in the impressing unit and mounted for reciprocable motion therein,

said impression members including sidewall members having a pair of openings therein;

support guides secured between said sidewall members in alignment with said openings; and

ink pad holders having ink pads slidably received in said support guides;

said openings being spaced at points in close contiguity to said type carrying pinion wheels on opposite sides thereof, whereby the inserted pads are in contacting relation with type on the wheels so that type members may be inked when the type wheels are moved in either direction.

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