Nov. 30, 1965 H. J. KREIS 3,221,148

MAIL SORTING CARD

Filed June 7, 1962 5 Sheets-Sheet 1

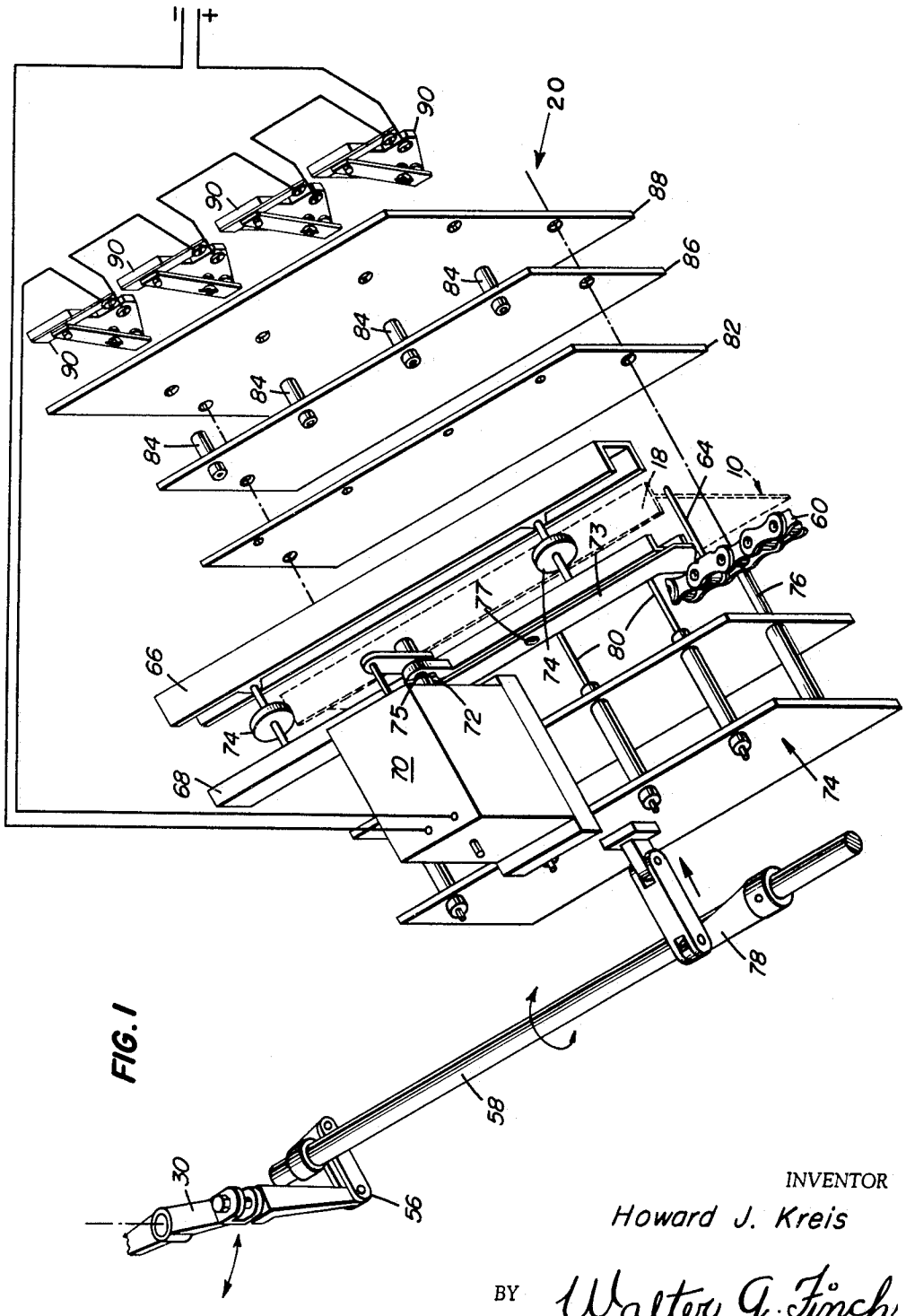


FIG. 1

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MAIL SORTING CARD

Filed June 7, 1962 5 Sheets-Sheet 2

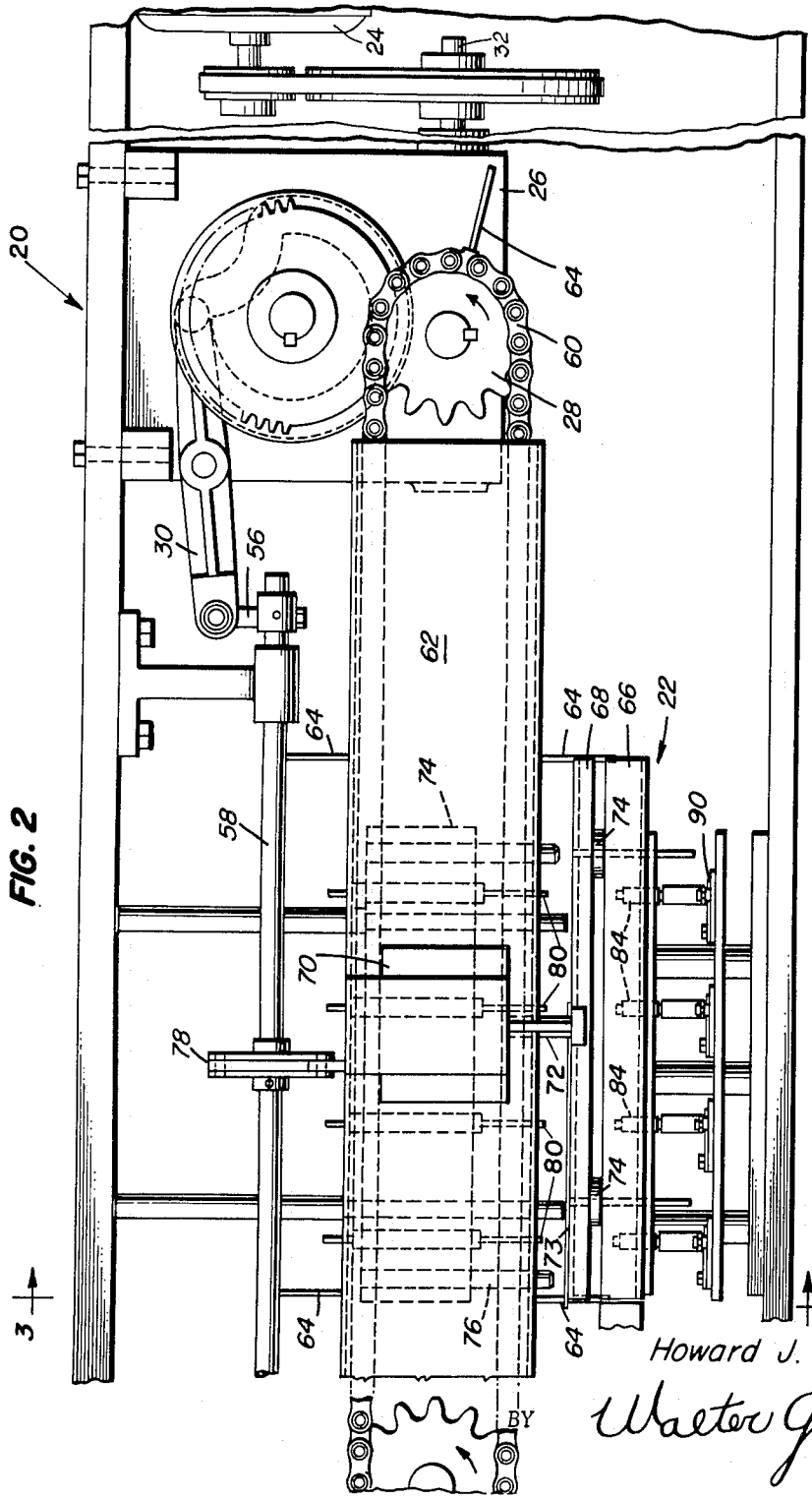


FIG. 2

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Nov. 30, 1965 H. J. KREIS 3,221,148

MAIL SORTING CARD

Filed June 7, 1962 5 Sheets-Sheet 3

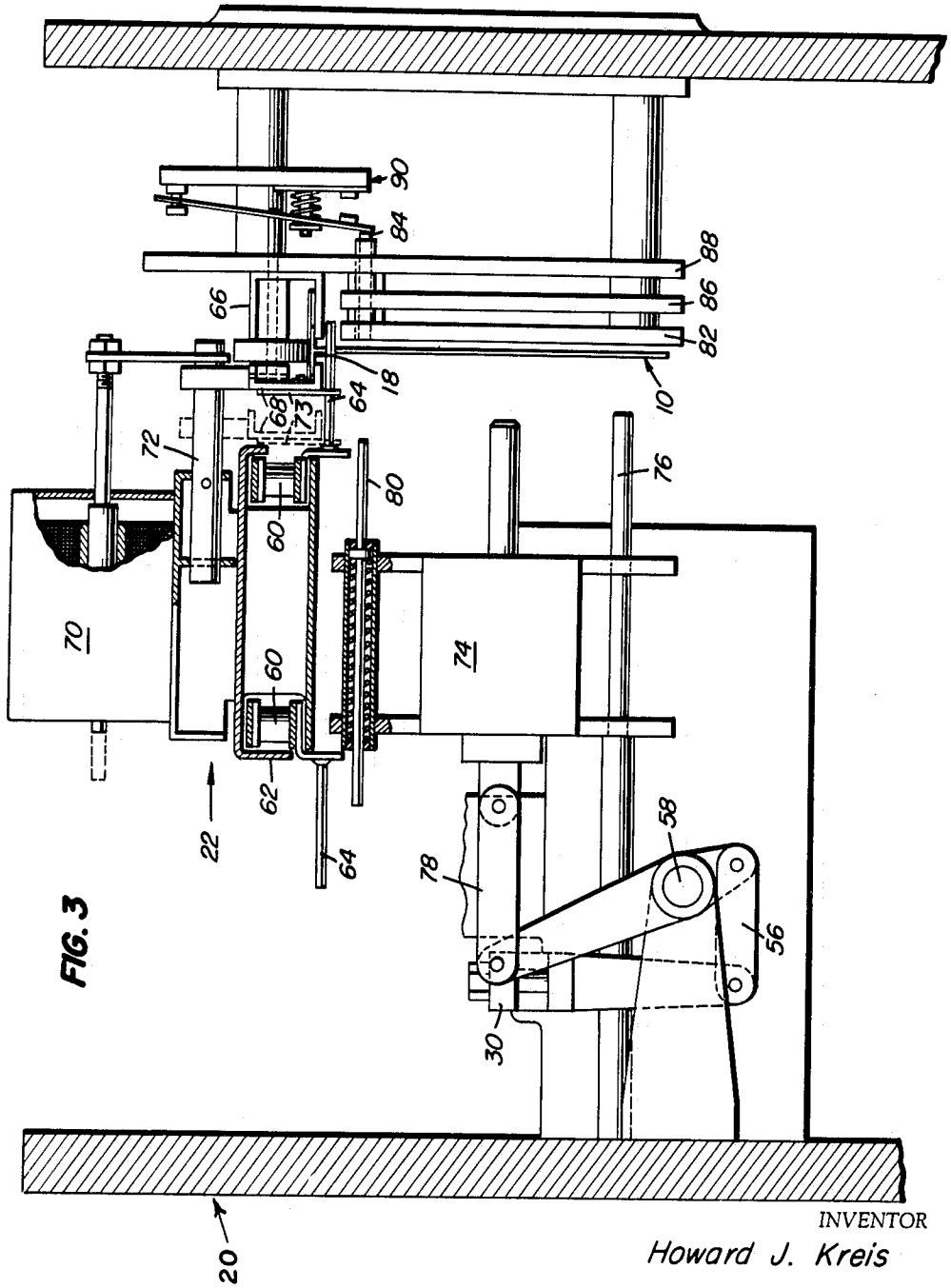


FIG. 3

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Nov. 30, 1965 H. J. KREIS 3,221,148

MAIL SORTING CARD

Filed June 7, 1962 5 Sheets-Sheet 4

FIG. 4

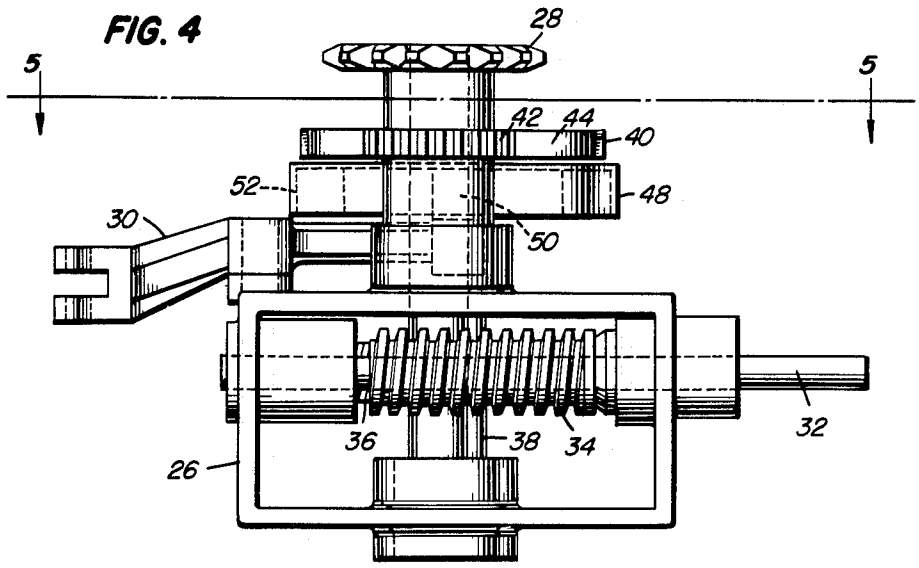
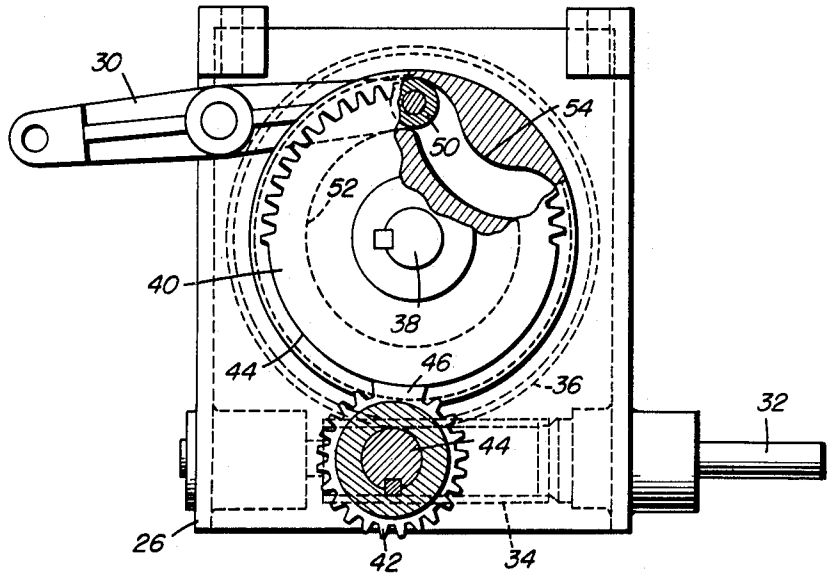


FIG. 5



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Nov. 30, 1965 H. J. KREIS 3,221,148

MAIL SORTING CARD

Filed June 7, 1962 5 Sheets-Sheet 5

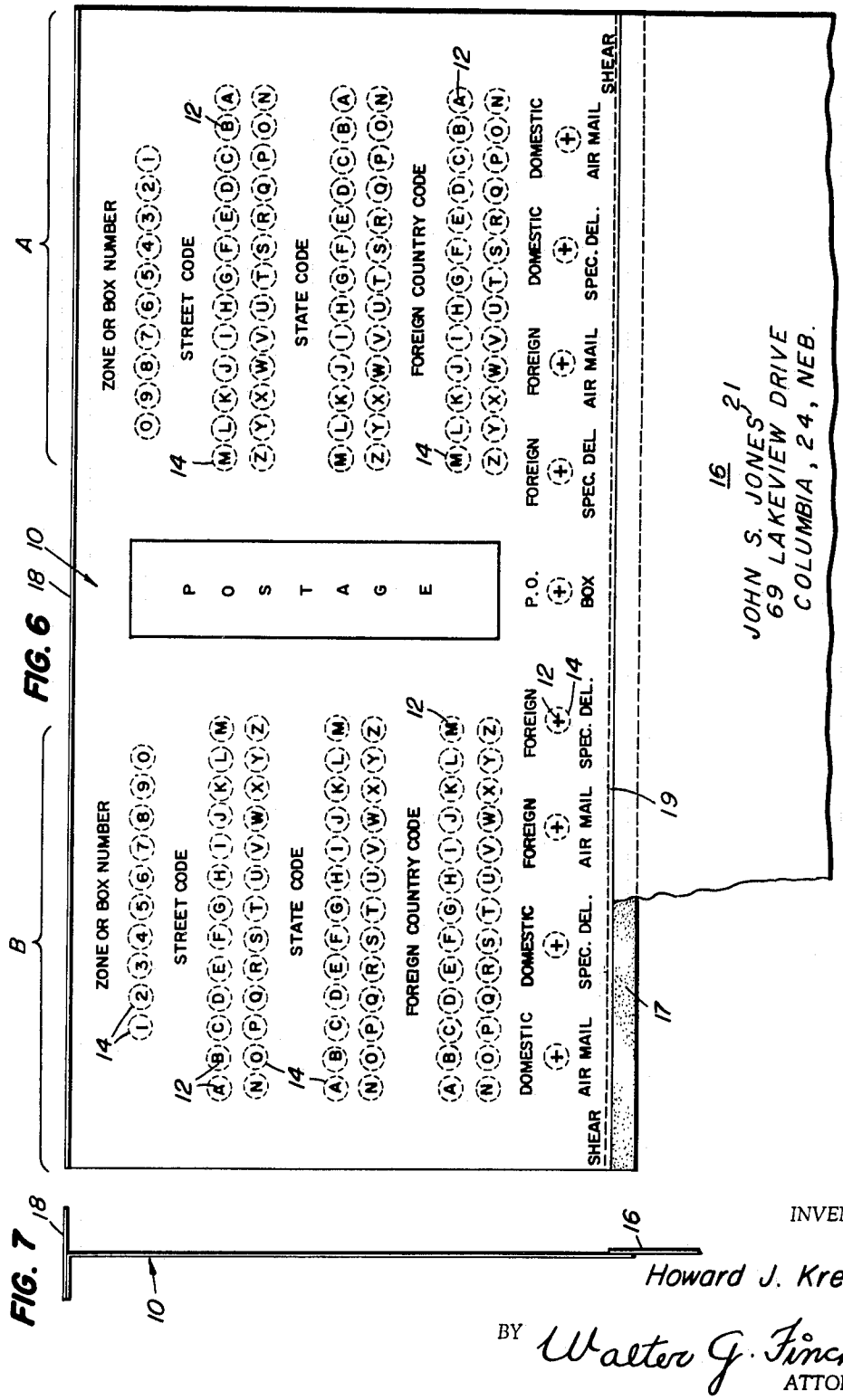


FIG. 6

FIG. 7

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3,221,148

MAIL SORTING CARD

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Filed June 7, 1962, Ser. No. 200,726
10 Claims. (Cl. 235—61.12)

This invention relates generally to classifying equipment, and more particularly it pertains to an address card for mail to facilitate the automatic sorting thereof.

An object of this invention is to provide a card for attachment to each piece of mail, said card engaging with mechanism to transport it to selected pouches or containers in accordance with the preparation of the card.

Another important object of this invention is to provide a special prepared card forming a part of each piece of mail, which can be automatically sensed. This card is prepared by the sender at the time of addressing and is so arranged with redundancy so as to minimize error and not require special positioning for "read out" at the post office. The card also provides for the engagement of the mail in the sorting machine.

Yet another object of this invention is to provide a classifying card which can be correctly loaded into a classifying machine by the sense of touch.

Still another object of this invention is to provide an arrangement for automatically sorting envelope mail irrespective of the bulk or irregularity thereof.

Other objects and attendant advantages of this invention will become more readily apparent and understood from the following detailed specification and accompanying drawings in which:

FIG. 1 is a somewhat schematic exploded perspective view of a registration station for a mail sorting machine which utilizes the cards of this invention;

FIG. 2 is a plan view of one end of the mail sorting machine of FIG. 1;

FIG. 3 is an end elevation taken on line 3—3 of FIG. 2;

FIG. 4 is an enlarged top view of a gear box which actuates the mail sorting machine;

FIG. 5 is a side view, partly broken away, of the gear box showing details of the cam slot;

FIG. 6 is a full size depiction of the novel mailing card for use with the automatic mail sorting machine of this invention; and

FIG. 7 is an end view of the mailing card of FIG. 6 showing a track slide which supports it and the mail while it traverses the mail sorting machine.

Referring now to the details of the drawings, in FIG. 6 there is shown a mailing card 10 of paper board similar to post card stock. Each half of this card 10 is printed with a predetermined arrangement of groups of accurately positioned characters, numerals, and letters 12, those on the right half A being arranged to be in reverse lateral order to those on the left half B thereof.

Each letter, character, or numeral 12 is surrounded by a frangible perforation circle 14 allowing it to be selectively punched out with the point of an instrument such as a pencil leaving a code aperture at the location on the card 10.

The bottom edge of the card 10 is gummed with an adhesive 17 for affixing it to the edge of a letter envelope 16, newspaper, magazine or other piece of mail. The top edge of the card 10 is folded at a right angle and a track slide 18 in the form of an elongated strip of the same paper board stock is symmetrically glued thereon giving a T-shaped configuration to the assembly when viewed end-on, as shown in FIG. 7.

The card 10 may be sold with postage printed upon it as on present day Government post cards or a space may be provided for stamps as shown.

The card may incorporate a shear line for automatically

detaching the card by knife means not shown after the sorting process to be related whereupon the delivery by the postman is made to the final destination through the usual address 21 on the mail 16 itself.

The mirror image halves A and B of the card when properly punched, for example, MD for Maryland; etc. in accordance with the desired addressing of the letter allow it to be machine read from either side and additionally gives a redundancy which checks upon itself to avoid error as will be related.

The mail 16 with attached card 10 is inserted in a mail sorting machine 20 illustrated in FIGS. 1, 2, and 3. Each sorting machine 20 comprises a plurality of registration stations 22 in series, only one of which is shown and these are driven simultaneously by a motor 24. The motor 24 is belted to a gear box 26 which provides two outputs operating synchronously together, namely a periodically interrupted rotary uni-directional motion at a chain sprocket 28, and a rocking motion at a pivoted rocker arm 30.

The gear box 26 is driven by the motor 24 through a drive shaft 32. This drive shaft 32 carries a worm 34 which meshes with a worm wheel 36 as shown in FIGS. 4 and 5. The worm wheel 36 is secured to a shaft 38 which also mounts an intermittent gear 40. An intermittent pinion 42, mounted on a stub shaft 44, meshes with the intermittent gear 40 and is keyed to the previously mentioned chain sprocket 28. Dwell areas 44 and 46 on the intermittent gear 40 and pinion 42 cause an interrupted transmission of rotary motion therebetween. Consequently, the sprocket 28 rotates a turn and stops, then repeats in the same direction.

The worm wheel shaft 38 additionally rotates a cam wheel 48 mounted thereon. A follower 50 mounted on one leg of the pivoted rocker arm 30 traces a circular cam slot 52. At a cam rise 54 in the cam slot 52, the rocker arm 30 is caused to oscillate one cycle.

This action corresponds to a stop period of the sprocket 28. Through linkage 56 shown in FIGS. 1, 2, and 3, this one cycle of oscillation of rocker arm 30 is transmitted by linkage 56 to a long crank shaft 58 extending the length of the mail sorting machine 10 and serving the plurality of registration stations 22.

Also extending the length of the mail sorting machine and traversing the plurality of registration stations 22, there is provided an endless chain 60 driven by the sprocket 28. The chain 60 travels in a chain guide 62 and mounts a plurality of outwardly extending fingers 64 at regular intervals.

Each registration station 22 has a pair of spaced opposed U-shaped guide channels 66 and 68, the latter one being retractable on a rod 72 away from the former through the action of a spring return solenoid 70.

A pair of idler rollers 74 are journalled within these guide channels 66 and 68 so as to bear down upon the track slide 18 of the card 10 of a piece of mail inserted into the slot-like ends of the guide channels 66 and 68.

As the chain 60 moves, a finger 64 thereof engages with the card 10 and pushes it completely into the slot where the motion is halted as the chain 60 makes one of its periodic stops. It is to be noted that the letter envelope (or mail) 16 attached to the card 10 depends downward with it being suspended by the track slide 18 which is captivated between the lower flanges of the guide channels 66 and 68 when they are in near abutment.

At this time, while card 10 is at a standstill, the crank shaft 58 moves a registration plate assembly 74 along guide pins 76 through the action of a crank arm and linkage 78. This advances two sets of spring loaded pins 80 against the card 10, one set for the right side of card 10 and the other set for the left side. Because the card 10 is symmetrically arranged and punched, the facing direc-

tion for "left" or "right" is unimportant and the mail sorting machine 20, therefore, can be loaded by a blind person.

The pins 80 of each registration station 22 are differently located. Therefore, each station 22 seeks out a unique combination of punched out letters or numerals (perforation circles) 14 of the card 10. Should this combination be found, the pins 80 pass through the card 10 and through a female registration plate 82 to impinge upon floating insulated actuators 84 which are loosely captive in a holder plate 86. An apertured guide plate 88 then directs each insulated actuator 84 against an individual electrical contact assembly 90.

These contact assemblies 90 for each registration station 22 are wired in series. If all the combinations of card 10 punched out letters or numerals is satisfied for both right and left sides of the card, all the contact assemblies 90 close and actuate the solenoid 70.

The solenoid 70 moves the guide channel 68 as shown in phantom lines in FIG. 3, where guide latch 73, which is gravity operated on the hinge point of a rivet 77, retains it by means of a slot 75 provided in the solenoid shaft 72 until the registration plate assembly 74 returns to its standstill position, and card 10 is then released and allowed to drop into a pouch or receptacle beneath. Optionally, the released card 10 may be directed to drop into another sorting machine 20 for second stage sorting. As chain 60 begins its next advance, it immediately actuates latch 73, thus releasing guide channel 68 to return to near abutment with the guide 66.

The card 10 moves laterally if the solenoid 70 is not actuated and passes under the urging of a chain finger 64 into the guide channels 66 and 68 of the adjacent registration station 22 of the same mail sorting machine 20 where the previously described combination sensing process is repeated for a different combination of punched out letters or numerals.

Thus, it will be obvious that each registration station 22 senses one of the "codes" comprising the combination punched out on a card 10. A plurality of mail sorting machines 20 automatically senses the entire address and thus sorts the mail.

Obviously many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. A card for routing an article to a selected station, comprising, card stock having a printing area, adhesive means along one edge of said card stock, said card stock having a shear line adjacent said one edge thereof and a right angle fold at the opposite edge thereof, a symmetrically applied strip of card stock secured to said fold whereby said strip and fold assume a track configuration for supporting and conveying an article attached to said adhesive means at one edge of said card stock, and an address code on said card stock, whereby said article attached to said card stock may be automatically routed by said track configuration, with said article being attachable from said card stock along said shear line.

2. A card for routing an article to a selected station, comprising, card stock having printing areas on opposite sides thereof, an adhesive along one edge of said card stock, said card stock having a shear line adjacent said one edge of said card stock and a right angle fold at the opposite edge thereof, a symmetrically applied strip of card stock secured to said fold whereby said strip and fold assume a T-shaped configuration for supporting and conveying an article attached to said adhesive means at one edge of said card stock, indicia means printed with a predetermined arrangement of groups of accurately positioned characters in reverse order on said printing areas on opposite sides thereof and an address code on said card stock, whereby said article attached to said card stock may be automatically routed by said T-shaped configuration, with said article being detachable from said card stock along said shear line.

3. A mail sorting card, comprising, card stock having printing areas on opposite sides thereof, adhesive means along one edge of said card stock, said card stock having a shear line adjacent said one edge of said card stock and a right angle fold at the opposite edge thereof, a symmetrical strip of card stock applied to said fold whereby said strip and fold assume a T-shaped track configuration for supporting and conveying an article attached to said adhesive means at one edge of said card stock, and an address code on said card stock.

4. A mail sorting card, comprising, card stock having a printing area on at least one side thereof, adhesive means along one edge of said card stock, said card stock having a shear line adjacent said one edge of said card stock and a right angle fold at the opposite edge thereof, a symmetrically applied strip of card stock secured to said fold whereby said strip and fold assume a track configuration for supporting and conveying an article attached to said adhesive means at one edge of said card stock, indicia means printed with a predetermined arrangement of groups of accurately positioned characters on said printing area, and an address code on said card stock, whereby said article attached to said card stock may be automatically routed by said track configuration, with said article being detachable from said card stock along said shear line.

5. A sorting card for routing an article to a selected station, comprising, card stock having a printing area, adhesive means along one edge of said card stock, said card stock having a shear line adjacent said one edge thereof and a right angle fold at the opposite edge thereof, a strip of card stock secured to said fold whereby said strip and fold assume a track configuration for supporting and conveying an article attached to said adhesive means at one edge of said card stock, indicia means printed with a predetermined arrangement of groups of accurately positioned characters on said printing area, with each character being surrounded by a frangible perforation circle in said card stock allowing it to be selectively punched out, and an address code on said card stock, whereby said article attached to said card stock may be automatically routed by said track configuration when properly selected, with said article being detachable from said card stock along said shear line.

6. A card for routing an article to a selected station, comprising, card stock having a printing area, adherent means along one edge of said card stock, said card stock having a right angle fold at the opposite edge thereof, a symmetrically applied strip of card stock secured to said fold whereby said strip and fold assume a track configuration for supporting and conveying an article attached to said adherent means at said one edge of said card stock, and an address code on said card stock, whereby said article attached to said card stock may be automatically routed by said track configuration.

7. A card for routing an article to a selected station, comprising, card stock having printing areas on opposite sides thereof, a holding means along one edge of said card stock, said card stock having a right angle fold at the opposite edge thereof, a symmetrically applied strip of card stock secured to said fold whereby said strip and fold assume a T-shaped configuration for supporting and conveying an article attached to said holding means at one edge of said card stock, indicia means printed with a predetermined arrangement of groups of accurately positioned characters in reverse order on said printing areas on opposite sides thereof and an address code on said card stock, whereby said article attached to said card stock may be automatically routed by said T-shaped configuration.

8. A mail sorting card, comprising, card stock having

printing areas on opposite sides thereof, holding means along one edge of said card stock, said card stock having a right angle fold at the opposite edge thereof, a symmetrical strip of card stock applied to said fold whereby said strip and fold assume a T-shaped track configuration for supporting and conveying an article attached to said holding means at one edge of said card stock, and an address code on said card stock.

9. A mail sorting card, comprising, card stock having a printing area on at least one side thereof, adhesive means along one edge of said card stock, said card stock having a right angle fold at the opposite edge thereof, a symmetrically applied strip of card stock secured to said fold whereby said strip and fold assume a track configuration for supporting and conveying an article attached to said adhesive means at one edge of said card stock, indicia means printed with a predetermined arrangement of groups of accurately positioned characters on said printing area, and an address code on said card stock, whereby said article attached to said card stock may be automatically routed by said track configuration.

10. A sorting card for routing an article to a selected station, comprising, metallic card stock having a printing area, adhesive means along one edge of said card stock, said card stock having a right angle fold at the opposite edge thereof, a strip secured to said fold whereby said strip and fold assume a track configuration for supporting and conveying an article attached to said adhesive means at one edge of said card stock, indicia means printed with a predetermined arrangement of groups of accurately positioned characters on said printing area, with each character being surrounded by a frangible perforation circle in said card stock allowing it to be selectively punched out, and an address code on said card stock, whereby said article attached to said card stock may be automatically routed by said track configuration when properly selected.

No references cited.

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