Sept. 12, 1950 L. M. POTTS 2,522,463

RECEPTACLE FOR MAGNETIZABLE RECORD STRIPS

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FIG. 2

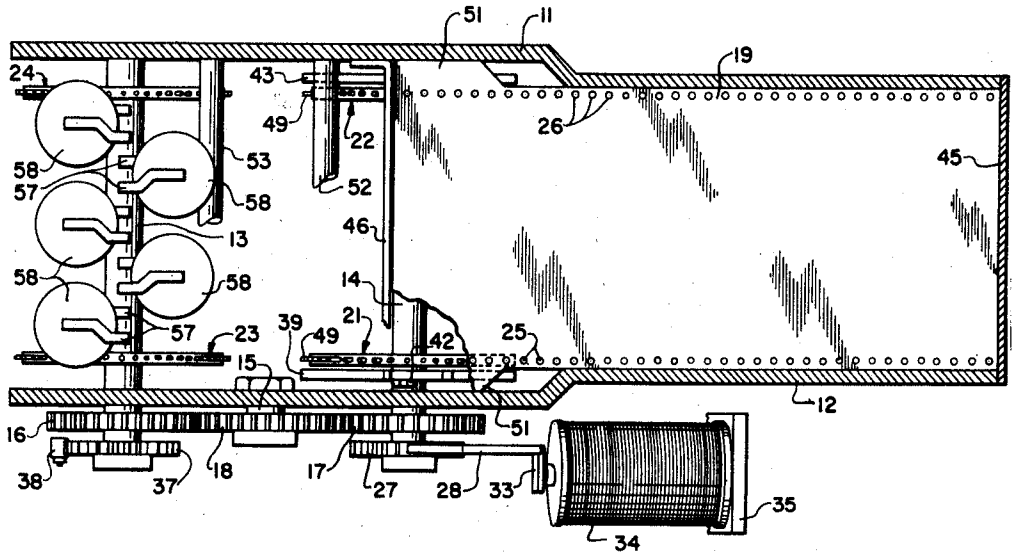
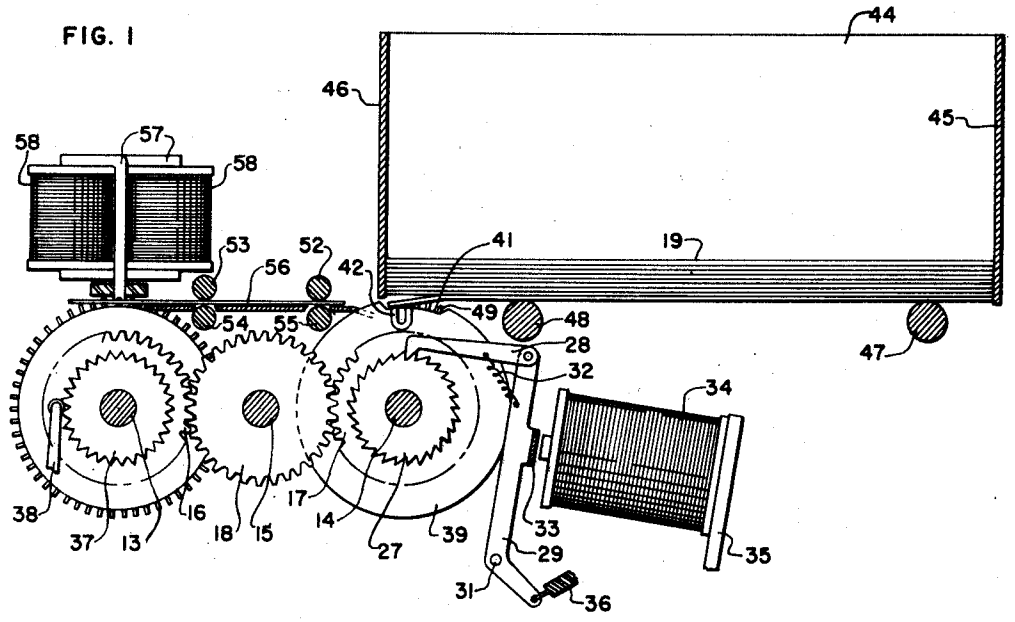


FIG. 1



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FIG. 4

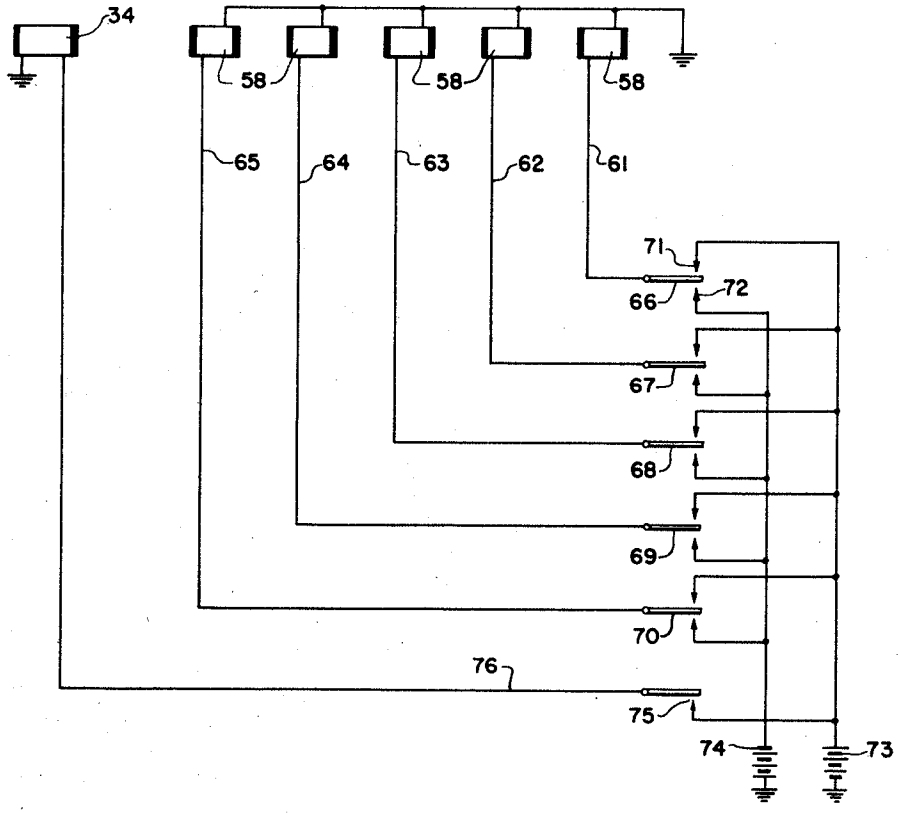
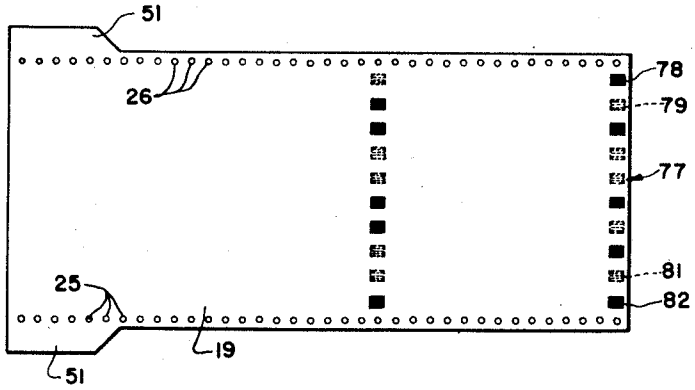


FIG. 3



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UNITED STATES PATENT OFFICE

2,522,463

RECEPTACLE FOR MAGNETIZABLE RECORD STRIPS

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Application June 11, 1947, Serial No. 754,033

2 Claims. (Cl. 346—22)

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This invention relates to magnetic recording systems and more particularly to an arrangement for making magnetic code recordings on magnetic plates.

The primary object of the invention is to provide a device for preparing a magnetic record on individual steel cards.

Another object of the invention is to produce on a steel card a magnetized record comprising a plurality of transverse rows of magnetized areas, and to feed in a novel manner unmagnetized cards into recording position.

Briefly, the arrangement according to the present invention comprises a magnetic card recorder and automatic feeder from a stack of cards. The system provides for the transverse magnetization of the card through the use of five magnets, each code impulse being a north-south or south-north magnetization in a pair, depending on whether a marking or spacing condition exists. The five magnets are each controlled by a magnet controller contact while a card feed magnet is also controlled by a contact. The controller contacts could be operated by having a set of code bars, as disclosed in copending Potts application Serial No. 755,446 filed June 18, 1947, control the code controller contacts, and the universal bar control the feed controller magnet.

The foregoing and other objects and features of the present invention will be more fully described in the following description when considered in the light of the accompanying drawings, wherein:

Fig. 1 is an elevational view of the device according to the present invention with certain parts shown in section;

Fig. 2 is a top view of the device according to the invention;

Fig. 3 is a plan view of the card utilized in the present invention; and

Fig. 4 is a schematic diagram of the electrical circuit employed with the device of the present invention.

Having reference to Figs. 1 and 2 of the drawings, wherein similar reference characters represent similar parts throughout the several views, the device according to the invention comprises a pair of side plates 11 and 12 (Fig. 2) in which are journaled for rotation the ends of two shafts 13 and 14. A stud shaft 15 is carried in plate 12 intermediate the shafts 13 and 14. Fixed to shafts 13, 14, and 15, externally of side plate 12, are gears 16, 17, and 18, respectively, of such diameter that the shafts

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13, 14, and 15 rotate at the same speed and make one revolution while a card or ticket 19 is advancing for its full length.

Fixedly mounted on shaft 14 and positioned adjacent the inside faces of side plates 11 and 12 are a pair of sprocket feed wheels 21 and 22 which are adapted to cooperate with marginal rows of feed holes in the card 19. Shaft 13 is also provided with a pair of sprocket feed wheels 23 and 24 positioned in alignment with the corresponding sprocket wheels 21 and 22 and with the marginal feed holes 25 and 26 in the card 19. A ratchet 27 is fixed to the shaft 14 and is provided with teeth having an angular pitch corresponding to the spacing of the feed holes 25 and 26 such that for each unit step imparted to the ratchet a corresponding unit step will be imparted to the card 19. As observed in Fig. 3, a row of code marks is aligned with the feed holes 25 and 26. Associated with the ratchet wheel 27 is a feed pawl 28 pivotally carried at the extremity of a lever 29 pivotally mounted on a suitably located pivot 31. A spring 32 normally biases the pawl 28 toward the periphery of the ratchet wheel 27.

The lever 29 is provided with an armature 33 which is adapted to coact with the core of an electromagnet 34 appropriately mounted on a bracket 35 in the present device. When the magnet 34 is energized, the pawl 28 is advanced to engage the next tooth of the ratchet 27; and when the magnet 34 is de-energized, a spring 36 attached to lever 29, operates the lever 29 counterclockwise (as viewed in Fig. 1) to advance the ratchet wheel 27 one tooth or angular step in a counterclockwise direction. On the shaft 13 there is fixed a star wheel 37 corresponding in number of angularly spaced teeth to the ratchet wheel 27. Star wheel 37 is adapted to be engaged by a jockey or detent member 38 so as to accurately locate the card 19 for impressing a magnetic record thereon.

A cam disc 39 is fixed to the shaft 14 and is positioned between the sprocket wheel 21 and the side plate 12. Cam disc 39 is provided on its periphery with a cam notch 41 and at the bottom of the notch 41 and secured to the face of the cam disc 39 is a small permanent magnet 42. A cam disc 43 of like size and characteristic is also fixed to the shaft 14 between the sprocket wheel 22 and the side plate 11.

The device according to the present invention also is provided with a magazine or hopper 44 comprising the side plates 11 and 12, a rear plate 45 and a front plate 46. The magazine 44

carries the blank forms or steel cards 19 which are supported by rollers 47 and 48. The feed pins 49 on the sprocket wheels 21 and 22 engage the feed holes 25 and 26 in only the lowermost one of the cards or steel plates 19. The forward end of the plate 19 is flared, as at 51, to cooperate with the cam disc 39 and 43.

When the notches 41 are rotated into registry simultaneously with the flared portions 51 of the lowermost plate 19 the permanent magnets 42 pull down the front end of the plate 19 onto the sprocket wheels 21 and 22, whereupon the pins 49 engage the feed holes 25 and 26. Then, as the sprocket wheels 21 and 22 are rotated by the stepping action of the stepping magnet 34 through pawl 28 and ratchet wheel 27, the lowermost card 19 is ejected from the magazine 44, and the next lowermost form or card 19 is moved to the left, and after a very small amount of motion the forward end thereof is held by the front plate 46. The relation between the notch 41 and the length of the flared portion 51 is such that the advancing card 19 will not be lifted from the pins 49, but at the proper instant the high part of each cam disc will engage the flared portions 51 of the next lowermost plate 19 and thereby hold said plate out of engagement with the sprocket teeth 49 until the leading edge of notch 41 has again reached the lower edge of front plate 46.

The new or lowermost card 19 engaged by the sprocket wheels 21 and 22 is advanced in a step-by-step manner leftwardly through the guide rollers 52, 53, 54, and 55, as indicated by previously ejected card 56, to be engaged by the teeth on sprocket wheels 23 and 24 and to be thereby advanced through the recording zone which is located directly under the pole pieces 57 of magnets 58, there being one magnet 58 for each element of the code; namely, five in the present embodiment. In Fig. 4 is shown a schematic circuit arrangement for controlling the magnetic recorder according to the present invention. The winding of magnets 58 is connected to ground, and also over conductors 61, 62, 63, 64, and 65 to contact tongues 66, 67, 68, 69, and 70 in a keyboard device wherein the slidable code bars could control the contact tongues 66 to 70. The contacts 71 and 72 associated with each of the tongues 66 to 70 are connected to positive and negative battery 73 and 74, respectively. A universal contact 75 is closed for each key operation to connect positive current from battery 73 over conductor 76 to the card stepping magnet 34. The five contact tongues 66 to 70 are set for each key operation according to the code to be recorded magnetically on the steel card 19 (or 56). It will be observed that when a record is made, the magnet 34 as well as all of the magnets 58 will be energized at the same time, but magnets 58, however, will be magnetized in one direction or the other according to the code set up on the tongues 66 to 70 and produce magnetized spots on the form as shown in Fig. 3. Magnet 34 is always magnetized in one direction only.

Having reference to Fig. 3, a steel card or form 19 is shown in plan view. Card 19 may be a thin sheet of steel such as thin clock spring material, or it may be built up of a sheet of nonmagnetic material and a sheet of magnetic material. Since these plates 19 are to be stacked, the provision of a nonmagnetic surface on one side is a considerable advantage, although probably not necessary. The character shown at transverse row 77 is the letter A. The number 1 impulse is represented by an upper mark 78, for example, a north pole, and a lower mark 79 representing a south pole. A spacing condition is represented by opposite marks as, for example, an upper marking 81 representing a south pole and a lower marking 82 representing a north pole in the number 5 position.

Although the present invention has been disclosed in connection with a particular embodiment thereof, it is understood that other equivalent arrangements are contemplated, and that the present invention is limited only by the range and scope of the appended claims.

What is claimed is:

1. In combination, a receptacle for magnetizable record strips, said receptacle having an opening to facilitate withdrawal of said record strips singly, and means cooperably related to said advancing means and said opening for seizing the leading end of a record strip to effect the withdrawal of said strip from said receptacle, said seizing means comprising a rotatable disc having a peripheral notch and a permanent magnet cooperating with said notch, whereby said notch and said magnet are presented cyclically to said opening to magnetically attract a record strip to initiate withdrawal of said strip from said receptacle.

2. In combination, a receptacle for magnetizable record strips, said receptacle having an opening adjacent to the leading edge of the next strip to be withdrawn to facilitate withdrawal of said record strips singly, and means cooperably related to said advancing means and said opening for seizing a record strip to effect the withdrawal of said strip from said receptacle, said seizing means comprising a rotatable disc having a peripheral notch and a permanent magnet cooperating with said notch, whereby said notch and said magnet are presented cyclically to said opening to magnetically attract a record strip to initiate withdrawal of said strip from said receptacle.

MARTHA W. C. POTTS,
Executrix Under the Last Will and Testament of Louis M. Potts, Deceased.

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