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PUNCHED-CARD INSERTION APPARATUS

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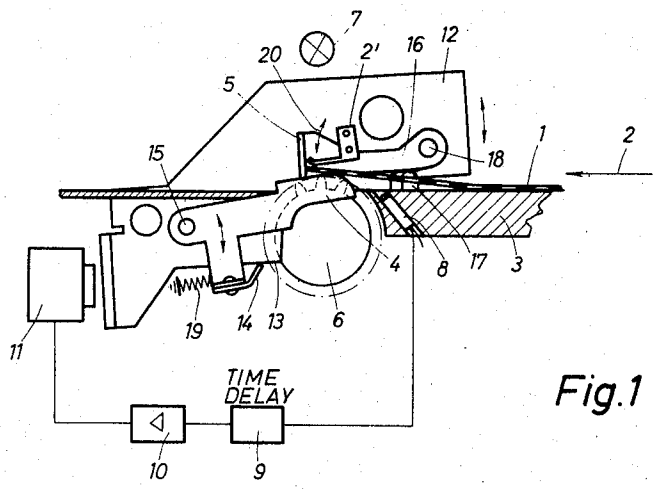


Fig.1

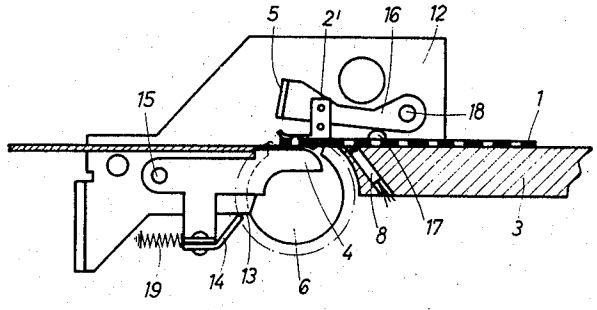


Fig.2

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PUNCHED-CARD INSERTION APPARATUS

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The present invention relates to an arrangement for inserting card-shaped media into evaluating equipment, and more particularly to equipment in which said card-shaped media will be moved along by a beaded sprocket-wheel mating with feed-holes on said card-shaped media.

When feeding punched cards with the aid of beaded sprocket-wheels, it often occurs, especially at the beginning of the feed cycle, that the portion of the cards between the feed-holes is damaged by the sprocket-wheel. To avoid this damage, one conventional type of equipment has one or two flat springs or the like ahead of the beaded sprocket-wheel, by which the front edge of the medium, while being inserted, is lifted up so that this edge is initially prevented from being engaged by the sprocket-wheel; said equipment also provides one or two flat springs which are bent concavely in relation to the evaluating table, which the medium contacts in such a relationship that the first feed-hole will come to lie approximately above one bead of the beaded sprocket-wheel, by which springs the medium is pressed towards the evaluating table with the aid of cooperating means. For controlling the movement of these retaining springs, a light barrier is provided which is actuated by the medium itself, and which controls an electromagnet effecting the pulling-down of the retaining springs.

The present invention improves upon this conventional arrangement, providing so-called lifting shoes as well as a stop bracket for arresting the inserted card or medium in the sense mentioned hereinbefore. With respect to these two means, however, the invention proposes an improved arrangement.

According to the invention, the holding-down appliance, the lifting shoes and the stop bracket are combined in such a manner with respect to their mechanical action that, upon pressing down the holding-down appliance, the lifting shoes will be automatically lowered into the plane of the table, and the stop bracket will be lifted above the plane of the table. In comparison with the conventional types of arrangements, this apparatus has the advantage that the cards, while being passed through the evaluating station, are not exposed to a severe mechanical stress. In addition thereto, the driving force of the novel arrangement may be smaller, so that the feed-holes will be less severely acted upon. The holding-down appliance may be controlled in the conventional manner with the aid of a light-barrier.

The above-mentioned and other features and objects of this invention will become more apparent by reference to the following description taken in conjunction with the accompanying drawings, in which:

FIG. 1 shows a longitudinal section of the novel arrangement with the holding-down appliance in the opened condition, and

FIG. 2 shows the same longitudinal section with the holding-down appliance in the closed condition.

The card **1** approaches the evaluating equipment in the direction indicated by the arrow **2**. In the course of its travel, the card initially slides on the table **3** and onto the lifting shoes **4**, so that the front edge of the card is slightly lifted. In the course of its further feed, the front edge of the card **1** presses against the angular stop bracket **5** so that the movement of the card is arrested, and the first hole of the punched card will come to lie above one bead or tooth of the feed-sprocket **6**.

Before the card presses against the stop bracket **5**, it cuts the light path between the light source **7** and the photoelectric cell **8**. The resulting signal is delayed by the time-delay device **9**, and is amplified in the amplifier **10**. This signal controls the electromagnet **11** which, in the energized condition, pulls down the holding-down appliance **12**. Upon pressing-down of the holding-down appliance **12**, the first hole of the card **1** will be engaged by the projecting bead or tooth of the feed-sprocket **6**, aided by the projection **21** of the hold-down appliance, and the driving system of the feed-sprocket will be switched on. In consequence of the pressing-down of the holding-down appliance **12**, the lifting shoes **4** are lowered, in opposition to the action of the spring **19**, into the plane of the operating table, in that the lower edge **13** of the holding-down appliance presses against the angular member **14** and turns the lifting disc about its center of rotation **15**. Likewise in consequence thereof, the stop bracket **5** is lifted, because the lever arm **16** on which the stop bracket **5** is formed meets against the pressing member **17** which is stationarily mounted to the table, and which is thus moved upwards about its center of rotation **18**, as is indicated by the double arrow **20**.

FIGURE 2 shows the same sectional view as FIG. 1 but with the holding-down appliance shown in the closed condition. For reasons of simplicity, both the electromagnet and its control system have been omitted in this drawing. As will be evident, the card may now be guided freely through the evaluating station because the lifting shoes are lowered into the plane of the table, and because the stop bracket is lifted.

While I have described above the principles of my invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example, not as a limitation to the scope of my invention as set forth in the objects thereof and in the accompanying claims.

What is claimed is:

1. An arrangement for inserting card-shaped information recording media into evaluating equipment comprising driving means including a feed-sprocket for moving said media through said evaluating equipment, stationing means for positioning the feed-holes of said media relative to said driving means, means responsive to the position of said media to initiate the mechanical feed process, and coupling means for mating said recording media to said driving means, said coupling means including a holding-down appliance.

2. An arrangement according to claim **1** wherein said stationing means includes lifting shoes provided for raising the front edge of said medium to prevent the feed-holes of said medium from being engaged by the teeth of the feed-sprocket of said driving means, and a card-stop bracket provided for insuring that the first feed-hole will come to lie approximately above one tooth of the feed-sprocket of said driving means.

3. An arrangement according to claim **1** wherein said means responsive includes a light-source and photoelectric-cell arrangement which controls an electromagnet via a time delay and amplifier, said electromagnet in turn actuating said holding-down appliance.

4. An arrangement according to claim **2** wherein said lifting shoes comprise a lever arm with its center of rotation lying below the plane described by the path of said media, with an angular member being mounted to said lever arm against which said holding-down appliance bears when being pulled-down thus effecting the lowering of said lifting shoes.

5. An arrangement according to claim **2** wherein said card-stop bracket is coupled to a lever arm with the center of rotation of said lever arm lying above the plane described by the path of said media and wherein there

is provided a stationary pressing member which is acted upon by the said lever upon pressing-down of the holding-down appliance, so that the card-stop bracket is lifted away from the said path.

6. An arrangement according to claim 1 wherein said coupling means includes a projection on said holding-down appliance which presses said medium onto said feed-sprocket when said holding-down appliance has been actuated by said means responsive.

7. An arrangement for inserting card-shaped media into evaluating equipment comprising an evaluating table in which is arranged a beaded sprocket-wheel, said beaded sprocket-wheel operating as driving means for meshing with the feed-holes of said media and moving said media through the evaluating equipment, lifting shoes provided adjacent to the sprocket-wheel for lifting the front edge of said media to such an extent as to prevent engagement of said feed-holes by said sprocket-wheel, a stop bracket to insure that said first feed-hole will come to lie approximately over one bead of the sprocket-wheel, means consisting of a photocell and light-source arrangement which actuates an electromagnet via a time-delay and amplifier circuit, said electromagnet in turn attracting a holding-down appliance coupled thereto and including said lifting shoe and stop bracket arrangement and a projection attached thereto for pressing the card upon said sprocket-wheel, said holding-down appliance, lifting shoe and stop bracket operating simultaneously so that upon pressing-down of the holding-down appliance, the lifting shoe will be lowered into the plane of said table and the stop bracket will be lifted off the plane of said table.

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