

Dec. 1, 1953

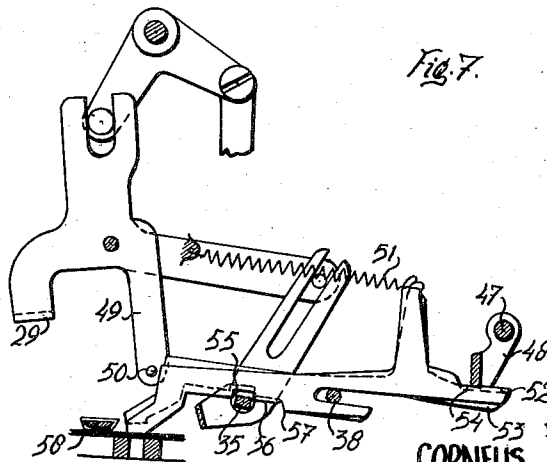
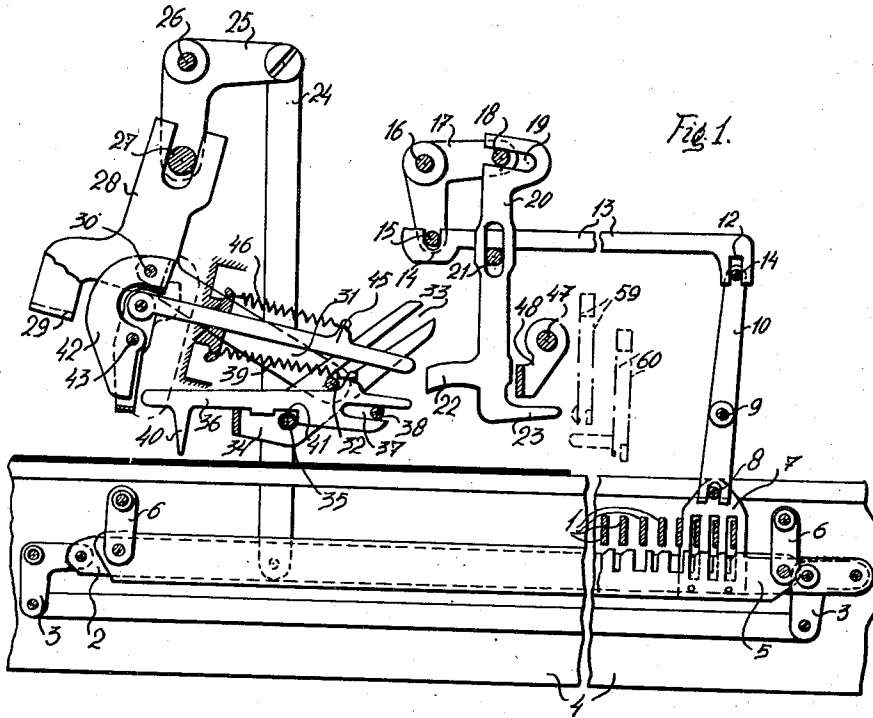
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2,660,888

CHECKING DEVICE FOR PERFORATOR AND PERFORATOR TAPES

Filed Aug. 6, 1947

3 Sheets-Sheet 1



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CHECKING DEVICE FOR PERFORATOR AND PERFORATOR TAPES

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3 Sheets-Sheet 2

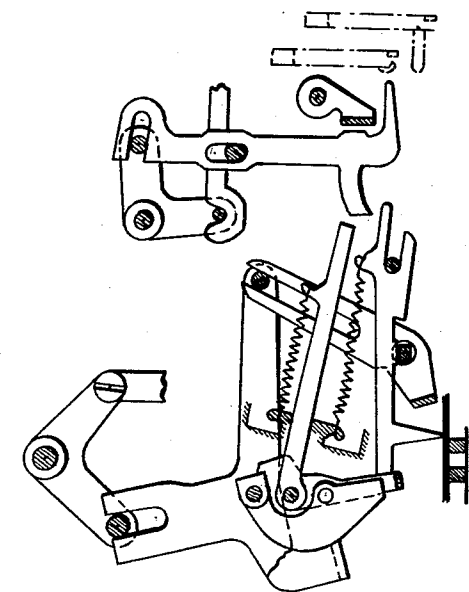


Fig. 4.

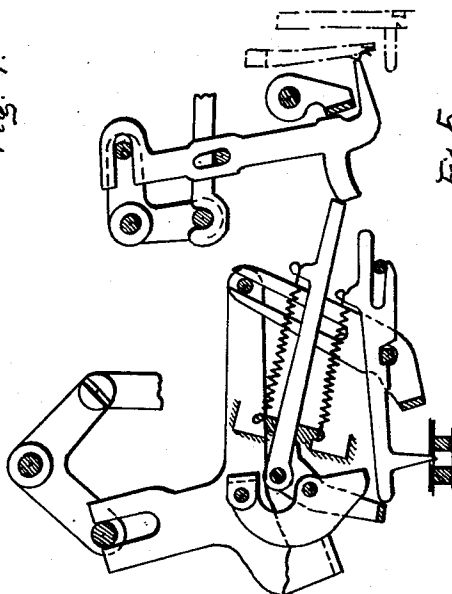


Fig. 5.

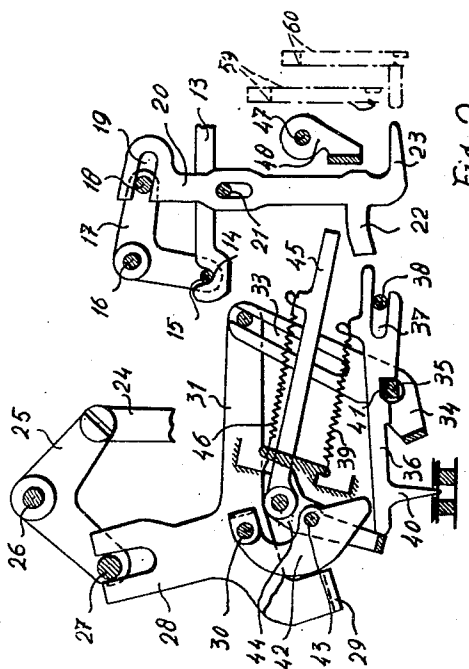


Fig. 2.

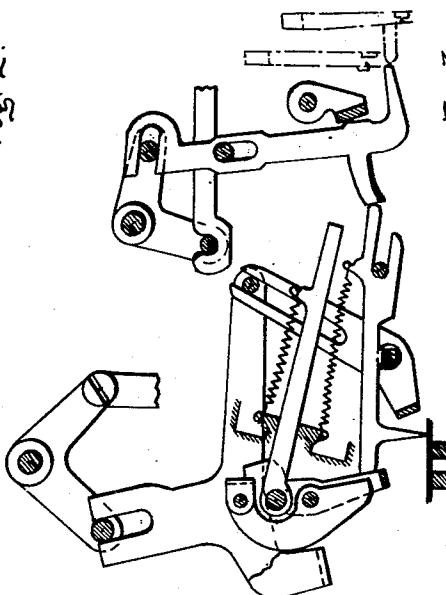


Fig. 3.

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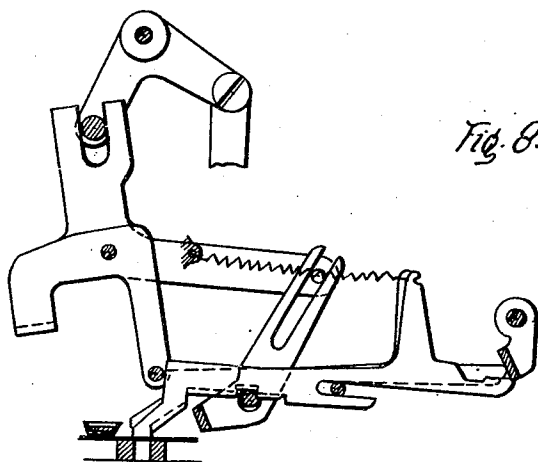
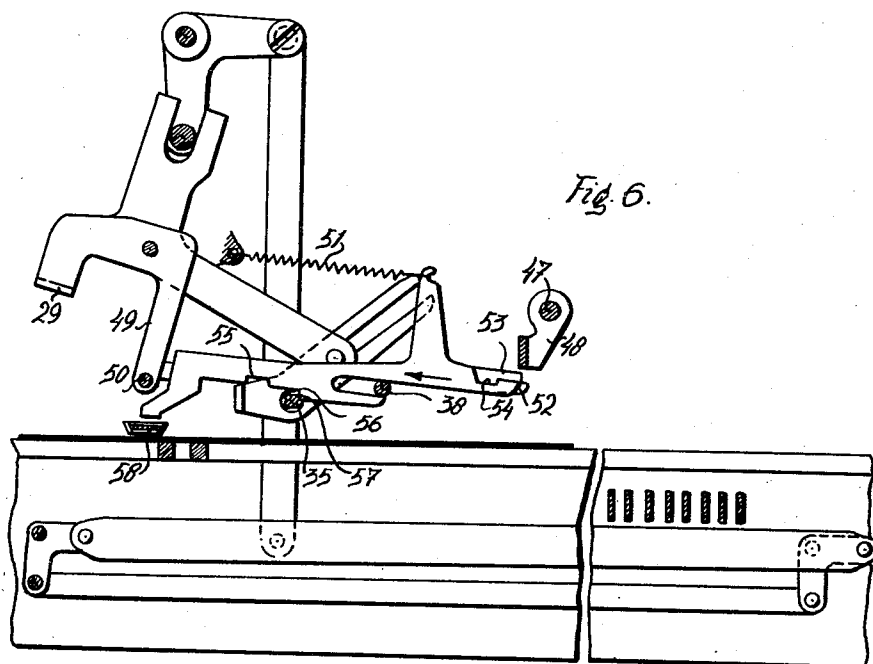
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CHECKING DEVICE FOR PERFORATOR AND PERFORATOR TAPES

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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CHECKING DEVICE FOR PERFORATOR AND
PERFORATOR TAPESCornelis Hendricus Stuivenberg, Haarlem,
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Patent expires February 14, 1965

11 Claims. (Cl. 73-156)

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When checking perforations in perforator cards or perforator tapes it is a matter of importance to ascertain not only whether the investigated card has really perforations at the appropriate places, but also whether the card through faults has perforations in wrong places. The known checking-devices that enable such a complete check are working electrically (with inherent risk of failures due to contact faults) or are working mechanically. The known mechanical checking-devices of perforator cards for a complete check investigate the card in question by devices applied to various sides of it. The drawback of this construction consists in that due to the application of devices above and below the card, a rather complicated mechanism is obtained.

The invention relates to a testing device for perforator cards and perforator tapes, the card that is to be tested being sensed by mechanical devices. It is an object of this invention to provide a testing device of the aforementioned type in which it will suffice that all the parts necessary for the checking process are be applied to one side only of the card to be investigated. According to the invention, this object is reached because the sensing device that is sensing a perforation place, in the position while it is sensing a perforation place, is blocked in the direction parallel with the card only when there is a perforation, whereas it can be moved parallel with the card when there is no perforation.

The invention is illustrated by way of example in the accompanying drawing, in which:

Fig. 1 is a section through a testing device according to the invention with the various elements in normal position;

Figs. 2-5 illustrate sections similar to that of Fig. 1, but with the various elements in different positions;

Fig. 6 shows a testing device comprising an auxiliary device for printing indications by means of which a card can be visibly checked to determine whether it has been properly perforated or not;

Figs. 7-8 represent the auxiliary device in various positions.

In Fig. 1, only some key levers or feelers 1 of the sensing mechanism have been shown. Below the key levers a joint strip 2 is provided, 50

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which is hinged to two angle-levers 3. These levers 3 are interconnected by a bar 4. Moreover, a number of bars 5 provided with notches are arranged underneath the key levers 1. Each of these bars is so connected to two levers 6 that they can be pushed or turned to the right. The notches of the various bars 5 differ from each other in that some notches have a large width, so that the key levers that are above them can drop into the notches without causing a shift of the relevant bar 5, while other notches have only a width that corresponds to the thickness of the key lever, one side part of such a notch having a slant surface, so that the relevant bar 5 is shifted sideways to the right when a key lever 1 drops into such a notch. A device 7 has been connected to each bar 5, which device 7 with a pin 8 drops into a part of the two-arm lever 10, sustained at a shaft 9 and having its lower end fork-shaped. The lever 10 near its upper arm is provided with a pin 11 adapted to drop into a notch 12 of a slide 13. The other extremity of the slide 13 is provided with another notch 14 adapted to engage a pin 15 carried by an angle-lever 17 that is pivotally mounted on a shaft 16. To the second arm of the angle-lever 17 a pin 18 has been connected adapted to drop into a groove 19 of a revolving shiftable member 20. The shiftable member 20 is guided by a bar 21 engaging an oblong hole in the member 20, so that it can be shifted in vertical direction and can be revolved around bar 21. At its lower part the shiftable member 20 has a nose 22 projecting to the left and a nose 23 directed to the right. A bar 24 is hinged at its lower end to the strip 2, while the upper end of bar 24 is connected to an angle-lever 25 pivotally supported by a shaft 26. The second arm of the angle-lever 25 is provided with a pin 27 adapted to engage the upper fork-shaped part of an arm 28 of a bridge member 29, which is pivotally supported by a shaft 30. Another arm 31 of this bridge member 29 is provided with a pin 32 adapted to engage a groove 33 of a release bridge 34 pivotally supported by a shaft 35. Above this last bridge 34, sensing devices 36 have been provided, which have grooves 37 that engage a bar 38. The sensing devices are each influenced by a spring 39. Each sensing device 36 acts as a carrier for a feeler pin 40

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directed downwardly. On the lower side of the sensing devices 36 there is provided a notch 41 adapted to drop over the shaft 35 the notch 41 that is within the reach of the sensing devices 36 is of a square section. The lateral boundaries of the notches 41 are different in height; the right hand side acts as striking device for the shifting of the relevant sensing devices 36 under the influence of the appropriate spring 39 to the left, while the left hand side in a manner to be explained later, in co-operation with the shaft 35 is adapted to prevent a shifting of the relevant sensing device 36 to the right. The springs 39 have been so arranged as to urge the sensing devices to the left; moreover they tend to revolve the bar 38 in anti-clockwise direction.

The cards are sensed column for column. Therefore, there is a row of sensing or feeler pins 40 positioned one behind the other with regard to the drawings adapted for registration with the columns of perforations on the cards. In other words, the row of sensing pins extends at right angles to the plane of the drawings.

The card is moved in the machine stepwise so as to bring column after column under the row of sensing or feeler pins 40. This stepwise movement of the card is well known in the art.

For every column in position under the sensing or feeler pins 40, key levers are depressed to indicate the places in the column where perforations should be, the signaling devices then indicating whether perforations are provided in the columns at places where they are expected to be provided.

If the release bridge 34 is revolved anti-clockwise around the shaft 35, it will release the sensing devices 36. As a result thereof, the feeler pins 40 of the sensing devices 36 under influence of the springs 39 come to rest on the card that is to be tested, or, when the sensed places contain perforations, the pins 40 will pass through the card. The revolution of the sensing or feeler devices 36 which takes place during the sensing of a perforation, is limited because the relevant sensing devices with their lower side come to rest on the shaft 35. On that occasion the left hand limitation of the notch 41 is in such a position relative to the shaft 35 that has been equipped at this place with a square section that a shifting of the relevant sensing devices 36 to the right is impossible. Levers 42 have been pivotally supported by the shaft 30, i. e. as many levers 42 as there are sensing devices 36. The levers 42 have such a form that the lower part of it lies opposite the associated sensing device 36, when the respective sensing or feeler pin 40 has not gone through a perforation of the card that is to be tested. Pivotally connected to each lever 42 by means of a conical part 43 is a two-arm lever 44. The lower part of the lever 44 is bent in such a manner that it is opposite the associated sensing device 36, when the feeler pin 40 of it has gone through a perforation of the card that is to be tested. Hinged to the upper arm of the two-arm lever 44 is a slide 45 which is under the influence of a tension spring 46. The normal position of the slide 45 relative to the relevant lever 42 is the position in which a notch of the topmost arm of the lever 44 under influence of the spring 46 comes to rest against a bend of the lever 42.

To the right of the revolving shiftable member 20, a blocking bridge 48 has been fixed on a shaft 47. By revolving the bridge 48 anti-clock-

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wise, the shaft 47 can be revolved accordingly; in that manner it is possible to obtain a blocking of the device that checks the perforations, or an indicating device for mistakes can be operated. Such blocking methods that operate with the step by step switching on of the carriage with cards as well as with the keys of the testing equipment are known and therefore no further details of them are given here. Before the operation of the described testing equipment will be explained, the various possibilities occurring with the testing will be discussed in brief. The following four possibilities should be considered:

1. The card does actually contain a hole where a perforation is supposed to be.
2. The card does not contain a perforation where a perforation is supposed to be.
3. The card does not contain a perforation where no perforation is supposed to be.
4. The card does contain a perforation where no perforation is supposed to be.

In the cases 1 and 3 the testing equipment must enable a further operation with the testing equipment, while in the cases 2 and 4 an indication of a mistake or a blocking of the testing equipment must originate. When a multiple perforation of a card column is being tested the before mentioned four cases can occur all together when testing units test various perforation places. For the description of the operation the various cases are, however, discussed below separately, the test of a single perforation place being considered.

1. When the card at the considered perforation place must have a perforation, the relevant key is depressed and associated key lever 1 is moved down. This lever 1 shifts the relevant bar 5 to the right. As the bar 5 is shifted, the two-arm lever 10 is revolved anti-clockwise and in that manner the slide 13 is shifted to the left. By means of the angle-lever 17 the revoluble shifting part 23 is shifted to its lowest position, so that the nose 22 thereof is no more faced by the slide 45 but by the sensing device 36. After this shift has been effected, the key lever 1 during the further downward movement touches the strip 2, so that this strip is moved downwardly. Consequently, the bar 24 is pulled downwardly and, in that manner, the bridge 29 by means of the angle-lever 25 is revolved anticlockwise. During this revolution, the pin 32 of the bridge arm 31 in the groove 33 of the release bridge 34 slides outward. As a result thereof the bridge 34 is likewise revolved anti-clockwise. Consequently all the sensing devices 36 are released, their feeler pins 40 under influence of the springs 39 being moved against the card that is to be tested. At the perforation places where the card has perforations, the feeler pins 40 pass through the perforations, so that the relevant sensing devices with their bottom side come to rest on the shaft 35. In the considered case it is assumed that the card at the considered perforation place has a perforation. Thus, the feeler pin 40 of the sensing device 36, as shown in Fig. 2, has passed through the perforation in the card. At the revolving of the bridge 29 it finally knocks against the levers 42 of all the perforation places and carries these levers along anti-clockwise around the shaft 30. Thus, the lever 42 of the considered perforation place is also revolved in the said direction. As, however, the associated sensing device 36 is in the lowest position, the

lever 42 is no more opposite the sensing device 36, but it can move freely over this device. The bend of the two-arm lever 44 that is connected by means of the conical part 43 to the lever 42, will during the revolution of the lever 42, however, abut the sensing device 36 and will then be stopped. Consequently, at a further revolution of the lever 42, the lever 43 makes a clockwise revolution, the slide 45 being shifted to the right against the thrust of the spring 46. Since the nose 22 of the revolvable shiftable member 20 is no longer opposite the slide 45 but opposite the sensing device 36, the shift of the slide 45 has no influence. The lower arm of the two armed lever 44 being retained by the sensing device 36, a rather considerable force is exerted on the sensing device as the shifting of the slide 45 must be effected contrary to the force of the spring 46. This force on the sensing device 36, however, is taken up by the shaft 35, against which the device 36 rests with the edge of the notch 41. Therefore, the feeler pin 40 of the sensing device 36 need not withstand this force itself, and, therefore, can be made of small dimensions and rather light. As the revolvable shifting member 20 is not influenced by the slide 45, it remains in the position indicated in Fig. 2 without moving the blocking bridge 43. Therefore, no blocking of the sensing device occurs, so that the switching on of the card carriage can take place at the release of the depressed testing key when the strip 2 is moved upwardly again. When the strip 2 is moved upwardly again, the bridge 29 is revolved back again by means of the bar 24 and the angle-lever 25. The levers 42 are released again and by the revolving back of the release bridge 34 all the sensing devices 36 are lifted up again and brought back into the position indicated in Fig. 1. The step by step operating switching device for the card carriage of the testing equipment is as a matter of course so positioned that a shifting of the carriage can only take place when all the sensing devices 36 have been lifted up to such an extent that the feeler pins 40 no longer lie in perforations of the card. At a further upward movement of the released key lever 1 it finally also releases the strip 5, so that it can be returned again to the position indicated in Fig. 1. The shiftable part 20 is brought back again to its upper position.

2. When the perforation card that is to be tested, has no perforation at the considered perforation place, the positioning of the revolvable shifting part 20 takes place in the same way as described above. The control of the bridge 29 and the release bridge 34 takes place in the same manner. As the card has no perforation, the released sensing device 36 of the considered perforation place can, however, not pass with a feeler pin 40 through the card, but it remains lying on the card, so that the sensing device 36 remains with its left hand end within the reach of the relevant lever 42. When now an anti-clockwise movement is imposed upon the lever 42 during the revolution of the bridge, this lever presses on the sensing device 36 and shifts this device to the right contrary to the force of the spring 39. This shift can take place since the left hand limitation of the notch 41 of the sensing device 36 can be moved across the shaft 35. The nose 22 of the shiftable member 20 is moved by the wiping device 36, and in that manner the shiftable member 20 is revolved anti-clockwise around the shaft 21.

The shiftable member 20 knocks against the blocking bridge 48 and by means of this bridge the shaft 47 is revolved anti-clockwise, the testing device being blocked. The resetting of the various parts is effected at the release of the depressed testing key in exactly the same manner as described above in case 1. At the end of the considered operation, the released blocking remains, however, operative, so that a step by step switching of the card carriage is not originated and all the testing keys cannot be depressed. The blocking of these keys can be released in a known manner by a separate key, after which, if by mistake a wrong key is depressed, the right key can be depressed. At the same time when the blocking of the testing equipment is being effected, by means of an auxiliary device that will be explained hereafter, a signalling member for a mistake above or below the relative card column can be depressed, so that then the mistake that was stated during the test, can be derived from the tested card. When it is a matter of a perforation mistake of the card, the machine can be decoupled by the release key, and the zero key can switch on the card carriage over one step, after which the testing of the remaining columns can be continued.

3. When no perforation should be present at the considered perforation place, the strip 5 belonging to that perforation place is not shifted to the right during the depression of the relevant key-lever 1, as it has a broad notch under the depressed key 1, into which the key-lever 1 can drop directly. Thus, when the key 1 is being depressed, only the strip 2 is moved downwardly. As a result thereof the revolution of the bridge 29 and the release bridge 34 takes place in the manner described above. The released sensing device 36 is moved against the card, because in the considered case the card has no perforation near the perforation place, it remains with its feeler pin 40 lying on the card. If now the lever 42 is revolved anti-clockwise by the bridge 29, the sensing device 36 will be shifted parallel to the card. The shiftable member 20 being in its upper position, the shifting of the sensing device 36 goes on without influence, so that the blocking bridge 48 is not influenced. When the depressed testing key is released, all the displaced devices are moved back again to the position indicated in Fig. 1, the step by step switching of the card carriage being released and the testing equipment remaining released for a further testing.

4. If the perforator card has a perforation at the perforation place, the feeler pin 40 of the sensing device 36 passes through that perforation, the sensing device 36 coming to rest with its lower side on the shaft 35. Now the sensing device 36 is blocked again by the limitation of the notch 41 against a shifting movement parallel to the card and is with its left hand end in front of the bend of the two-arm lever 44. Thus, when the lever 42 is revolved anticlockwise by the bridge 29, a shifting of the slide 45 to the right takes place in the manner described above under 1. As, however, in this case the shiftable member 20 is in its upper position, the slide 45 engages the nose 22 of the shiftable member 20 and thus effects a revolution of the blocking bridge 48. Also in this case, the blocking of the testing equipment of the perforation can be released again by the mentioned special key.

As will be clear from the foregoing, the testing

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equipment according to the invention in all four instances discussed above operates reliably, so that the testing equipment is blocked whenever a mistake is discovered, irrespective of whether the mistake consists in the lack of a perforation or the presence of a perforation where no perforation should be. The described testing equipment can be provided with a device for printing testing signals. In this case the bridge 29 is equipped with another arm 49 having a pin 50. The pin 50 co-operates with two printing devices 52 and 53 that have been arranged on the bar 33, so that they can be shifted; these printing devices 52 and 53, which are each influenced by a spring, principally have the same form, they are only different from each other by the form of their extremities that project to the right. The length of the printing device 52 is a little greater than that of the printing device 53 and further has a notch 54. Both the printing devices 52 and 53 at their bottom side have a notch 55 of an almost rectangular form and further a roof-shaped elevation 56, at the end of which a striking side 57 is provided. The roof-shaped elevations 56 of the two printing devices 52 and 53 co-operate with the shaft 55 that has been slanted in the range of the printing devices 52 and 53. Under the left hand extremities of the printing devices 52 and 53 an inking pad 58 or similar device has been provided. At the described auxiliary device the printing devices 52 and 53 each have been equipped for printing a dash, the printing signals being impressed, however, in different places. If dashes are used as printing signals, and in all the columns of a card the result of the test turns out in the right way, a continuous dash under the perforation field of the card will be formed. If, however, a mistake was discovered in a column, the continuous line is interrupted at the relevant place and a dash corresponding to the width of a column is impressed above or below the line. The operation of the described printing equipment is as follows:

When the bridge 29 is being revolved, the two printing devices 52 and 53, which in their normal position with their left hand extremities under the influence of springs 51 rest against the inking-pad 58, are shifted to the right. The printing devices by co-operation of the roof-shaped elevations 56 are lifted up a little with the slanting part of the shaft 35 or revolved around the bar 33 anti-clockwise. This revolving action stops as soon as the highest point of the roof-shaped elevation 56 is reached. In case of a further shift to the right the notches 55 of the printing devices 52 and 53 finally come above the shaft 35, so that the printing devices 52 and 53 can make an anti-clockwise revolution around the bar 33. The blocking bridge 48, however, always releases only one of the two devices 52 and 53, so that only the released printing device can effect an impression of its signal. Depending on whether the blocking bridge 48 is in its normal position (Fig. 7) or has been brought into its blocking position (Fig. 3), the printing device 52 is released for printing and the printing device 53 is blocked or the printing device 53 is released and the printing device 52 is blocked. This operation is effected by the notch 54 of the printing device 52 and by the different lengths of the two printing devices 52 and 53 in co-operation with the blocking bridge 48. If the blocking bridge 48 is in its normal position, the right hand extremity of the printing device 53 engages the blocking bridge 48. As a result thereof, the printing device 52 with a

notch 54 is opposite the blocking bridge 48, so that the last printing device 52 can effect its printing movement. When the blocking bridge 48 is in the blocking position, only the outside end of the printing device 52 comes under the blocking bridge 48 due to the different lengths of the two printing devices 52 and 53. In this instance, the printing device 53 has been released for the printing movement, while the revolution of the printing device 52 is blocked by the engagement with the blocking bridge 48. In case of cards provided with multiple perforations, mistakes may occur, because too few perforations are present in card columns that have been found incorrectly perforated, while the perforations which are present are at those places where they are supposed to be. Such cases may be corrected by perforating the lacking perforations afterwards. According to a further development of the invention an indicating device can be provided at the testing equipment which indicating device gives different signals dependent on whether the mistake is due to the presence or the absence of a perforation. Thus e. g. in the testing equipment according to Figs. 1-5, two electric switches 59 and 60 can be equipped for each perforation place, the switch 59 being at the upper position of the revolvable shifting member 20 opposite the extension 23, while the switch 60 can be controlled by the revolvable device 20 in its lowest position by means of the extension 23. The two switches can control arbitrary indication devices, e. g. various glow-lamps. When faults crop up in a number of perforation places of a tested column, a number of glow-lamps burn simultaneously. It stands to reason that a correction of the tested card by later effecting further perforations can be useful only, when perforations are absent from places where they should be, otherwise mistakes occurring on the card cannot be corrected and the card must be replaced by a new one. The current emissions that are controlled by the switches 59 and 60 that belong to the various perforation places, can be transferred to counting devices, in order to fix in that manner the number of occurring mistakes. This can be of interest for the checking of perforator machines in which the tested cards have been perforated.

What I claim is:

1. A device for sensing perforated records, which comprises in combination, supporting means for supporting a record to be sensed, sensing means normally spaced from said supporting means to allow insertion of a record to be sensed between said supporting means and said sensing means, said sensing means comprising a feeler pin adapted to enter a perforation in said record, a carrier arranged to move in a direction substantially transverse to the direction of movement of said pin when entering a perforation, said carrier supporting said pin, control means operatively associated with said carrier and operable to move said carrier in said transverse direction, means for actuating said control means in response to the initiation of a sensing operation, and abutment means associated with said carrier and operable in response to the entering of said pin into a perforation to prevent said control means from moving said carrier and thereby also said pin in a transverse direction.

2. A device for sensing perforated records comprising in combination; supporting means to support a record to be sensed, sensing means normally spaced from said supporting means to

permit insertion of a record to be sensed between the supporting means and sensing means, said sensing means comprising a feeler pin movable generally perpendicularly to the record to enter a perforation therein, a carrier supporting the pin and movable in a direction transverse to the said direction of movement of the pin, control means associated with the carrier operable when actuated to urge the carrier in said transverse direction, means for actuating said control means simultaneously with the initiation of a sensing operation, an abutment engageable with the carrier when the pin enters a perforation to prevent said transverse movement of the carrier, and signal means operable by the carrier when movement of the carrier takes place due to the absence of a perforation in the record to receive said pin.

3. A device for sensing perforated records comprising in combination; supporting means to support a record to be sensed, sensing means normally spaced from said supporting means to permit insertion of a record to be sensed between the supporting means and sensing means, said sensing means comprising a feeler pin movable generally perpendicularly to the record to enter a perforation therein, a carrier supporting the pin and movable in a direction transverse to the said direction of movement of the pin, control means associated with the carrier operable when actuated to urge the carrier in said transverse direction, means for actuating said control means simultaneously with the initiation of a sensing operation, an abutment engageable with the carrier when the pin enters a perforation to prevent said transverse movement of the carrier, and signal means operable by the carrier when movement of the carrier takes place due to the absence of a perforation in the record to receive said pin, there being a transmitting member having a first position between the carrier and signal means where movement of the carrier is effective to actuate the signal means and a second position displaced from its first position where the carrier is not effective to actuate the signal means.

4. A device for sensing perforated records comprising in combination; supporting means to support a record to be sensed, sensing means normally spaced from said supporting means to permit insertion of a record to be sensed between the supporting means and sensing means, said sensing means comprising a feeler pin movable generally perpendicularly to the record to enter a perforation therein, a carrier supporting the pin and movable in a direction transverse to the said direction of movement of the pin, control means associated with the carrier operable when actuated to urge the carrier in said transverse direction, means for actuating said control means simultaneously with the initiation of a sensing operation, an abutment engageable with the carrier when the pin enters a perforation to prevent said transverse movement of the carrier, a control member spaced from said carrier and operatively connected to said control means for being moved thereby in the said transverse direction when the said carrier engages said abutment, and signal means adapted for actuation by movement of said carrier and said control member in the said transverse direction.

5. A device for sensing perforated records comprising in combination; supporting means to support a record to be sensed, sensing means normally spaced from said supporting means to permit insertion of a record to be sensed be-

tween the supporting means and sensing means, said sensing means comprising a feeler pin movable generally perpendicularly to the record to enter a perforation therein, a carrier supporting the pin and movable in a direction transverse to the said direction of movement of the pin, control means associated with the carrier operable when actuated to urge the carrier in said transverse direction, means for actuating said control means simultaneously with the initiation of a sensing operation, an abutment engageable with the carrier when the pin enters a perforation to prevent said transverse movement of the carrier, a control member spaced from said carrier and operatively connected to said control means for being moved thereby in the said transverse direction when the said carrier engages said abutment, a transmitting member having a first position of alignment with said carrier and a second position of alignment with said control member, signal means adapted for actuation by movement of said transmitting member by the one of said carrier and control member with which it is aligned.

6. A device for sensing perforated records comprising in combination; supporting means to support a record to be sensed, sensing means normally spaced from said supporting means to permit insertion of a record to be sensed between the supporting means and sensing means, said sensing means comprising a feeler pin movable generally perpendicularly to the record to enter a perforation therein, a carrier supporting the pin and movable in a direction transverse to the said direction of movement of the pin, control means associated with the carrier operable when actuated to urge the carrier in said transverse direction, means for actuating said control means simultaneously with the initiation of a sensing operation, an abutment engageable with the carrier when the pin enters a perforation to prevent said transverse movement of the carrier, a control member spaced from said carrier and operatively connected to said control means for being moved thereby in the said transverse direction when the said carrier engages said abutment, a transmitting member having a first position of alignment with said carrier and a second position of alignment with said control member, and separate signal means for each said position of said transmitting member adapted for actuation by movement of the transmitting member as brought about by movement of the one of said carrier and control member with which it is aligned.

7. A device for sensing perforated records comprising in combination; supporting means to support a record to be sensed, sensing means normally spaced from said supporting means to permit insertion of a record to be sensed between the supporting means and sensing means, said sensing means comprising a feeler pin movable generally perpendicularly to the record to enter a perforation therein, a carrier supporting the pin and movable in a direction transverse to the said direction of movement of the pin, control means associated with the carrier operable when actuated to urge the carrier in said transverse direction, means for actuating said control means simultaneously with the initiation of a sensing operation, an abutment engageable with the carrier when the pin enters a perforation to prevent said transverse movement of the carrier, a control member spaced from said carrier and operatively connected to said control means for

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being moved thereby in the said transverse direction when the said carrier engages said abutment, a transmitting member having a first position of alignment with said carrier and a second position of alignment with said control member, signal means adapted for actuation by movement of said transmitting member by the one of said carrier and control member with which it is aligned, and means to initiate a sensing operation including means to position said transmitting member in one or the other of its first and second positions according to whether or not there is supposed to be a perforation at the point the record is to be sensed.

8. A device for sensing perforated records comprising in combination; supporting means to support a record to be sensed, sensing means normally spaced from said supporting means to permit insertion of a record to be sensed between the supporting means and sensing means, said sensing means comprising a feeler pin movable generally perpendicularly to the record to enter a perforation therein, a carrier supporting the pin and movable in a direction transverse to the said direction of movement of the pin, a pivoted control arm movable in the said transverse direction upon initiation of a sensing operation, said arm engaging and moving said carrier in said transverse direction when the feeler pin engages the surface of the record and passing idly by the said carrier when the pin enters a perforation, a lever pivoted on the arm and having means on one side of its pivot to engage the carrier when the pin enters a perforation, a control member connected with the lever on the other side of the said pivot, and abutment means engageable with the carrier when the pin enters a perforation to prevent movement of the carrier in the said transverse direction thereby to cause pivoting of said lever on said arm and actuation of said control member.

9. A device for sensing perforated records comprising in combination; supporting means to support a record to be sensed, sensing means normally spaced from said supporting means to permit insertion of a record to be sensed between the supporting means and sensing means, said sensing means comprising a feeler pin movable generally perpendicularly to the record to enter a perforation therein, a carrier supporting the pin and movable in a direction transverse to the said direction of movement of the pin, a pivoted control arm movable in the said transverse direction upon initiation of a sensing operation, said arm engaging and moving said carrier in said transverse direction when the feeler pin engages the surface of the record and passing idly by the said carrier when the pin enters a perforation, a lever pivoted on the arm and having means on one side of its pivot to engage the carrier when the pin enters a perforation, a control member connected with the lever on the other side of the said pivot, an abutment means engageable with the carrier when the pin enters a perforation to prevent movement of the carrier in the said transverse direction, thereby to cause pivoting of said lever on said arm and actuation of said control member, a transmitting member having a first position of operative alignment with said carrier and a second position of operative alignment with said control member to be moved by whichever of the carrier and control member it is aligned with should that one thereof be actuated during a sensing operation.

10. A device for sensing perforated records comprising in combination; supporting means to support a record to be sensed, sensing means normally spaced from said supporting means to permit insertion of a record to be sensed between the supporting means and sensing means, said sensing means comprising a feeler pin movable generally perpendicularly to the record to enter a perforation therein, a carrier supporting the pin and movable in a direction transverse to the said direction of movement of the pin, a pivoted control arm movable in the said transverse direction upon initiation of a sensing operation, said arm engaging and moving said carrier in said transverse direction when the feeler pin engages the surface of the record and passing idly by the said carrier when the pin enters a perforation, a lever pivoted on the arm and having means on one side of its pivot to engage the carrier when the pin enters a perforation, a control member connected with the lever on the other side of the said pivot, an abutment means engageable with the carrier when the pin enters a perforation to prevent movement of the carrier in the said transverse direction, thereby to cause pivoting of said lever on said arm and actuation of said control member, a transmitting member having a first position of operative alignment with said carrier and a second position of operative alignment with said control member to be moved by whichever of the carrier and control member it is aligned with should that one thereof be actuated during a sensing operation, a shaft rockable to prevent further operation of the device, and a bar on the shaft engageable by said transmitting member in each of its first and second positions, whereby the device is halted when an error in the record being sensed is sensed.

11. A device for sensing perforated records comprising in combination; supporting means to support a record to be sensed, sensing means normally spaced from said supporting means to permit insertion of a record to be sensed between the supporting means and sensing means, said sensing means comprising a feeler pin movable generally perpendicularly to the record to enter a perforation therein, a carrier supporting the pin and movable in a direction transverse to the said direction of movement of the pin, a pivoted control arm movable in the said transverse direction upon initiation of a sensing operation, said arm engaging and moving said carrier in said transverse direction when the feeler pin engages the surface of the record and passing idly by the said carrier when the pin enters a perforation, a lever pivoted on the arm and having means on one side of its pivot to engage the carrier when the pin enters a perforation, a control member connected with the lever on the other side of the said pivot, an abutment means engageable with the carrier when the pin enters a perforation to prevent movement of the carrier in the said transverse direction, thereby to cause pivoting of said lever on said arm and actuation of said control member, a transmitting member having a first position of operative alignment with said carrier and a second position of operative alignment with said control member to be moved by whichever of the carrier and control member it is aligned with should that one thereof be actuated during a sensing operation, a shaft rockable to prevent further operation of the device, a bar on the shaft engageable by said transmitting member in each of its first and

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second positions, whereby the device is halted when an error in the record being sensed is sensed, a pair of printing elements for printing on the record, means to move the printing elements in their printing direction by said control arm 5 during a sensing operation, a part on one printing element to engage said bar when the bar is not moved by said transmitting member to prevent the said one element from printing, and a part on the other printing element to engage 10 said bar when it is moved by said transmitting member to prevent the said other element from

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printing whereby the nature of the printing on the record will indicate the presence or absence of an error therein.

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