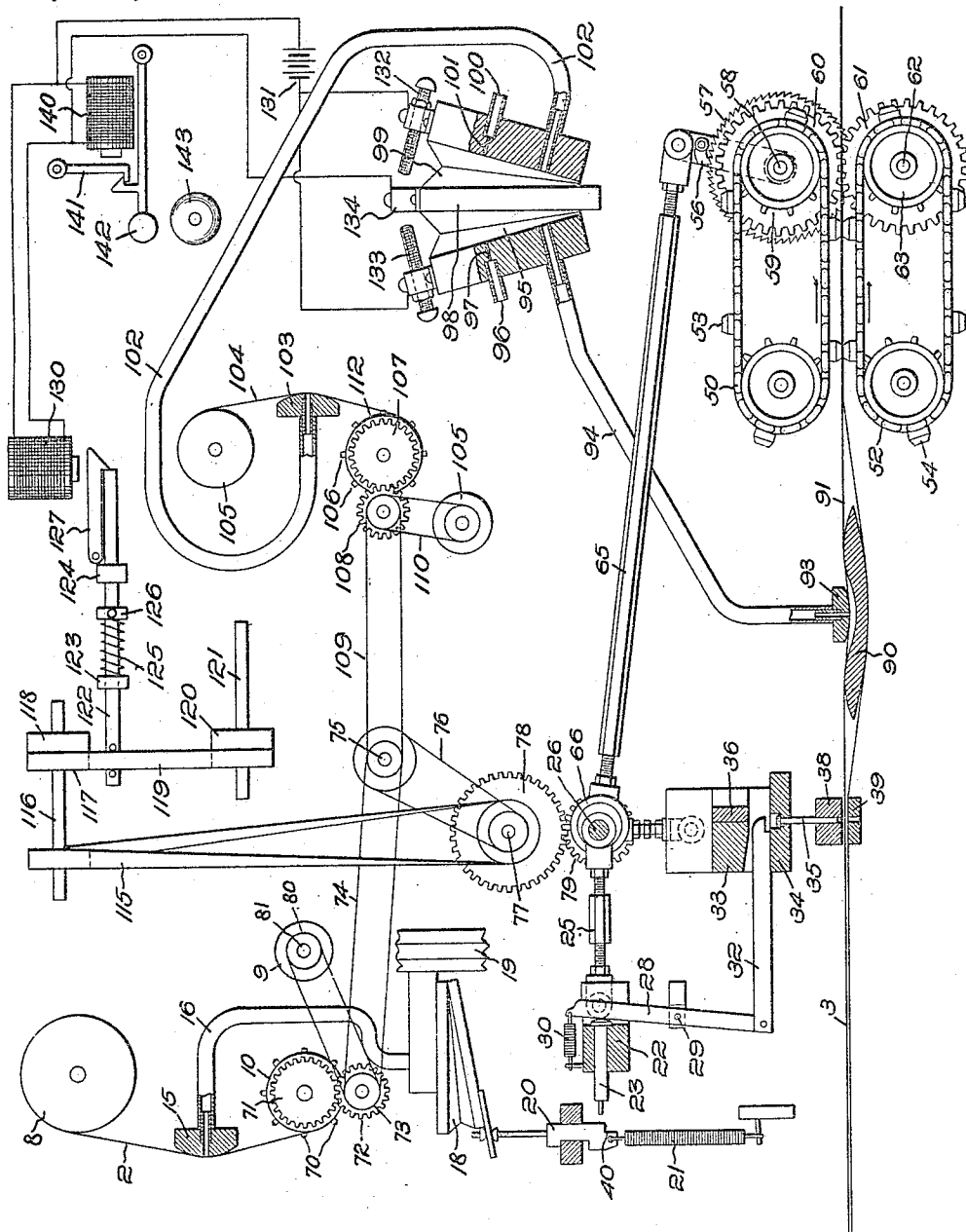


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PERFORATING MACHINE.

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PERFORATING-MACHINE.

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To all whom it may concern:

Be it known that I, CHARLES F. STODDARD, a citizen of the United States, and a resident of New York, county and State of New York, have invented an Improvement in Perforating-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to machines for making perforated note sheets for mechanical musical instruments; and pertains more particularly to mechanism cooperating with elements of a perforating machine, for detecting errors or omissions in the perforating operation.

Among other objects, the invention is intended to provide a detecting mechanism of the character suggested to inspect automatically perforated note sheets and to compare the same, so to speak, with a standard such as a pattern or master sheet, and to indicate differences between the two.

The character of the invention may be readily understood by reference to the accompanying drawing which shows the invention in one practical embodiment which has been selected for illustration.

An illustrative form of perforating mechanism, including pattern controlled punch-selecting means, will be first described.

A stencil or pattern sheet 2 is provided with perforations corresponding to perforations desired to be made in the note sheet material 3. This note sheet material may comprise a stack of sheets arranged to be punched collectively. The pattern sheet 2 is mounted upon a spool 8 and passes to a take-up roll 9 over a driving drum 10 more fully described hereinafter.

The pattern sheet 2 illustrates a prime controller of a punch-selecting mechanism which may be of any practicable type. For instance, the pattern sheet 2 cooperates with a pneumatic tracker bar 15 provided with vents to be opened by the perforations of the pattern sheet. Each vent is connected by a duct 16 with the controlling valves of a power pneumatic 18. A chest 19 is provided through which to exhaust the several pneumatics 18. As will be understood by those skilled in the art, when a vent of the tracker 15 is opened by a perforation in the

pattern sheet 2, suction in the chest 19 exhausts a power pneumatic 18 causing the latter to collapse. In thus collapsing, the pneumatic 18 lifts a selector slide 20 in the perforating machine; and when the tracker vent is again closed permitting the pneumatic 18 to reëxpand, the slide 20 is drawn downwardly to the position shown in the drawing, by a spring 21. It will be understood that there is a series of the selector slides 20 corresponding each to a punch for punching a note perforation in the note sheet material 3. But one complete set of selecting and punching devices is shown diagrammatically in the drawing and it will be understood that these parts are duplicated as many times as may be necessary to provide for punching the desired rows of perforations in the note sheet material.

The selecting mechanism comprises a horizontally reciprocating cross-head 22 carrying selector pins 23 which are so mounted as to slide lengthwise readily in the cross head 22. This cross-head 22 is connected by a link 25 with an eccentric upon the shaft 26, which shaft is rotated continuously during the operation of the machine thereby moving the cross head 22 and its gang of selector pins 23 toward and from the selector slides 20. A lever 28 fulcrumed at 29 bears at its upper end against the head of the selector pin 23 and is held in engagement with said head by a spring 30 which tends always to rock the lever 28 in a contraclockwise direction. The lower end of the lever 28 is pivotally connected to a selector bar 32, the right hand end of which in the drawing rests in a slide way in a vertically reciprocating cross head comprising the two connected parts 33, 34. The part 34 carries the punches 35 and the part 33 includes the punch-driving bar 36.

The cross head 33, 34 is reciprocated vertically in appropriate guideways by an eccentric upon the shaft 26 which eccentric is unnecessary to be shown. For each complete revolution of the shaft 26 the cross head 33, 34 is moved downwardly and then upwardly through one complete reciprocation. The punches 35 are carried sufficiently loosely in the cross head piece 34 to permit them to drop against the note sheet material 3 without punching the same except when a selector bar 32 has been moved far enough toward the right in the drawing to

be interposed between the driving bar 36 and a punch head.

The punches 35 are arranged to slide vertically in a stripper bar 38 which overlies the note sheet material 33 supported at the punching point upon a die 39.

With the described arrangement, when the cross head 22 is moved toward the left in the drawing, the lever 28 is permitted to rock slightly contraclockwise, and thereby to move the selector bar 32 toward the right. If the selector slide 20 remains in the position shown, the movement of the selector pin 23 is arrested in such a position that the selector bar 32 is not permitted to move far enough to be interposed in driving position between the punch 35 and the driver bar 36; but if the selector slide 20 has been lifted (by opening of the corresponding tracker vent) the cut out portion 40 of the selector slide is thereby positioned opposite the selector pin 23, permitting a sufficient additional movement of the pin, the lever 28 and selector bar 32 to move the latter into driving position and cause its corresponding punch to be driven through the note sheet material 3. As will be understood by those skilled in the art, the horizontal reciprocation of the selector cross head 22 and the vertical reciprocation of the punch cross head 33, 34, are relatively so timed that the cross head 22 is moved toward the left to position the various selector bars 32 appropriately to the perforations to be punched, preparatory to the descent of the cross head 33, 34 to drive the punches so selected through the note sheet material. It is to be understood that the punch-selecting and punching mechanism just described is merely illustrative, and any suitable equivalent or substitute may be employed.

The note sheet material 3 may be fed through the punching mechanism in any practicable manner as, for example, by some such feeding mechanism as that described in United States Patent No. 659,053, dated October 2, 1900. A feeding mechanism of this general type is shown diagrammatically in the present drawing in side elevation. The direction of feed is toward the right in the drawing. This feed mechanism comprises an upper apron 50 and a lower apron 52, each consisting of a pair of parallel sprocket chains connected to slats or cross bars 53 on the upper apron and 54 on the lower apron. The cross bars 53 and 54 on the respective aprons are so disposed that a bar 53 and a bar 54 register on opposite sides of the note sheet material 3 on adjacent runs of the two aprons so as to grip the note sheet material 3 between the bars with sufficient pressure to cause the note sheet material to accompany the aprons during their movement. The aprons are driven intermittently by a pawl 56 engaging a ratchet 57 upon a shaft

58 of one of the sprocket wheels 59 for the upper apron. Also fixed upon the shaft 58 is a gear 60 meshing with a gear 61 upon the shaft 62 for a sprocket wheel 63 of the lower apron. The pawl 56 drives this ratchet 57 in a contraclockwise direction and thereby through the gears 60 and 61 drives the two aprons in the directions indicated by the arrows in the drawing.

The pawl 56 is reciprocated by a pitman 75 connected to an eccentric 66 upon the shaft 26. The eccentric 66 is so disposed upon the shaft 26 that the aprons 50 and 52 remain at rest during the downward movement of the cross-heads 33, 34 to drive the punches; and when the cross-heads 33, 34 are moved upwardly, the eccentric 66 causes the aprons to be driven through one feed step so as to present a new part of the note sheet material 3 in position to be punched.

For the purposes of the illustrative mechanism, it is desired that the pattern sheet 2 be fed over the tracker bar 15 in synchronism with the operation of the perforating mechanism. The driving drum 10 is provided with teeth 70 equally spaced to engage similarly spaced marginal sprocket perforations in the pattern sheet 2. The drum 10 has fixed upon its shaft a gear 71 meshing with a pinion 72 fixed upon a shaft having a belt pulley 73 connected by a belt 74 with another pulley on a shaft 75, which shaft in turn is driven by a belt 76 over a shaft 77 connected by a gear 78 with a gear 79 mounted upon the shaft 26. The shaft for the pulley 73 is also connected by a belt 80 with the shaft 81 of the take-up roll 9, and the belt 80 is sufficiently loose to permit slippage in the rotation of the take-up roll.

With the described arrangement, there is a train of mechanism between the driving drum 10 for the pattern sheet and the shaft 26 by which the note sheet material is fed, such that the pattern sheet 2 and the note sheet material are driven in desired synchronism. It is to be understood that the relationship in which the pattern sheet 2 and note sheet material are to be fed, may be determined by any suitable mechanism and that diagramed in the drawing is merely illustrative.

The description thus far has pertained to an organized machine by which a pattern sheet selects certain punches by which successive perforations are to be made in the note sheet material, in relationships predetermined by the pattern sheet. In other words, the illustrative machine is intended to produce in the note sheet material a succession of perforations exactly corresponding with pattern perforations in the sheet 2. Next will be described a mechanism for detecting errors or omissions in the perforating operation covered by the pattern sheet.

The illustrative mechanism automatically inspects, so to speak, the note sheet material after it has been perforated. When a plurality of stacked note sheets are perforated collectively, if a punch is selected and driven far enough to perforate the topmost sheet, it will also perforate the entire stack. This is sufficiently reliable for all practical purposes and therefore it suffices and is considered convenient that the inspecting operation be directed to only one of the stack of note sheets and for this purpose a separator or guide 90 is provided and as shown, the topmost sheet 91 of the stack of note sheet material passes over the top of the guide 90 and the remaining sheets pass beneath the guide. A pneumatic tracker bar 93 is positioned to contact with the sheet 91 and has ducts corresponding to the rows of perforations which the perforating mechanism is arranged to punch. Each vent of the tracker 93 is connected by a duct 94 with a pneumatic 95 which is connected with a source of exhaust by a duct 96 and bleed 97. The purpose and operation of the pneumatic 95 will be more fully described hereinafter.

The movable board 98 of each pneumatic 95 is also the movable board of a second pneumatic 99 connected with a source of exhaust by a duct 100 and bleed 101. Each pneumatic 99 is connected by a duct 102 with a vent in a tracker board 103.

It will be understood that for each row of perforations in the note sheet material 3, there is a vent in the tracker 93 and a duct 94, a pair of pneumatics 95, 99, a duct 102 and a vent in the tracker 103. In other words, the parts just referred to and shown diagrammatically in the drawings, constitute one set of inspecting means corresponding to one row of perforations in the note sheet material 3. Such sets of inspecting means may be reduplicated so far as necessary, and it is preferred that there be one set corresponding to each row of perforations to be inspected.

Coöperating with the tracker 103 is an inspecting sheet 104 mounted upon a spool 105, passing thence over the tracker 103 over a driving drum 112 and to a take-up roll 105. The driving drum 112 is provided with teeth 106 equally spaced to engage similarly spaced marginal sprocket perforations in the inspecting sheet 104 so that said sheet shall be fed always in definite relation to the movement of the driving drum 112. A gear 107 fixed upon the shaft of the driving drum 112, meshes with a pinion 108 the shaft of which is belted by a belt 109 with the shaft 75 already referred to. The shaft of the pinion 108 is also connected by a belt 110 with the shaft of the take-up roll 105 and said belt 110 is sufficiently loose to permit slippage in the rotation of the take-up roll. With the arrangement just described, there

is a train of mechanism between the driving drum 112 for the inspecting sheet, and the shaft 26 of the perforating mechanism such that the inspecting sheet 104 and the note sheet material 3 are fed in desired relationship. It has already been explained that the pattern sheet 2 is driven in desired relationship or synchronism with the note sheet material 3, therefore the pattern sheet 2, the note sheet material 3, and the inspecting sheet 104, are all driven in predetermined relationship.

The inspecting sheet 104 is preferably a note sheet which has been perforated by hand or otherwise and inspected with great care by a skilled operative to insure the perfection of its perforations. Having been thus carefully prepared, it may serve as a standard perfected sheet to which the note sheet material 3, as perforated, may be compared, so to speak, in the operation of the machine.

As will be understood by those skilled in the art, the train of mechanism between the driving drum 112 and the feeding sprocket 57 for feeding the note sheet material 3, is so proportioned that a given perforation in the inspecting sheet 104 is presented at the inspecting tracker 103, at the time the corresponding perforation, if it has been correctly punched, should be presented by the note sheet material 3 at the tracker 93. Thus, each time a standard perforation in the inspecting sheet 104 opens a vent in the tracker 103, the corresponding vent in the tracker 93 will also be opened if the perforating operation has been correctly performed. Likewise, so long as a given vent in the tracker 103 is maintained open by a standard perforation in the inspecting sheet 104, the corresponding vent in the tracker 93 will also be maintained open if the perforation to be inspected has been perfectly cut to the desired length.

Thus so long as the perforating operation is performed without error, the vents of the tracker 103 and the corresponding vents of the tracker 93 will be opened and closed simultaneously and will be maintained open for like periods.

The effect of the simultaneous opening of corresponding vents in the trackers 93 and 103, will be to admit atmosphere equally to the opposed pneumatics 95 and 99. The bleeds 97 and 101 being preferably equal in capacity, this equal influx of atmosphere will not disturb the balanced opposition of the two pneumatics and therefore their common movable board 98 will not be moved. If, however, the perforating operation omits to make in the note sheet material 3 a perforation corresponding to one in the inspecting sheet 104, then the appropriate vent in the tracker 93 remains closed while the corresponding vent in the tracker 103

is opened by the standard perforation. Thus, the air in the pneumatic 95 remains in its normally exhausted condition while the exhaust in the pneumatic 99 is reduced by the inflow of atmosphere from the opened vent in the tracker 103. The effect is to move the movable board 98 of the pneumatics toward the left and this movement may be utilized for operating a stop motion or signal or the like as presently described more fully.

Similarly, the perforating operation may make the error of punching a hole in the note sheet material 3 where none should be punched and therefore when this improper perforation reaches the tracker 93, a vent will be opened at a time when there is no corresponding standard perforation in the inspecting sheet 104, to open the corresponding vent of the tracker 103. The effect of this is to admit atmosphere to the pneumatic 95 with the result that the movable board 98 of the pneumatics is moved toward the right, such movement being utilized to operate a stop motion or signal or the like.

The possible errors in the operation of the punch-selecting and perforating mechanism may arise from a number of causes. For instance, the stencil or pattern sheet 2 may contain an undesired perforation which would cause an undesired perforation to be made in the note sheet material 3; and this error would be detected as already described. Upon such detection the fault may be readily traced to the pattern sheet which may be suitably repaired to prevent a repetition. Likewise, the pattern sheet may lack a perforation which it should have thereby causing a desired perforation to be omitted from the note sheet material 3; and this fault being detected as described, may be traced to the pattern sheet and the lacking perforation may be supplied to avoid a repetition of the error.

On the other hand, if a desired perforation is found to be lacking in the note sheet material, but the corresponding perforation is found to be present in the pattern sheet 2, then the fault is attributable to some trouble in the train of punch-selecting or perforating mechanism pertaining to that particular perforation, and the difficulty may be readily and quickly located.

It is, of course, possible that desired perforations may be omitted from the inspecting sheet 104 or that it may contain improper perforations. In any such case, where the perforations of the inspecting sheet 104 fail to correspond with the perforations in the pattern sheet 2, the discrepancy will be detected as described and the operator will be given an opportunity to ascertain whether the error exists in the inspecting sheet 104 or the pattern sheet 2.

In other words, in the practical operation of the machine, both the pattern sheet 2 and the inspecting sheet 104 are supposed to be perfect standards; and the described inspecting apparatus serves, in its ultimate effect, to compare these two standard sheets and detect any discrepancies, as well as to compare them with the newly perforated note sheet material 3 in order to detect differences therein from the standards arising from errors in one or the other of the standard sheets or defects in the operation of the perforating mechanism.

There are various ways in which the detected errors may be made manifest for the purpose of stopping the machine or signaling the operator upon the occurrence of an error. The present drawings disclose an illustrative form of stop motion and signal.

The shaft 77 as illustrated is the main shaft from which the various parts of the apparatus are driven. It is connected by a belt 115 to a countershaft 116 having a fast pulley 117 and a loose pulley 118. A belt 119 connects the fast and loose pulleys alternately with a pulley 120 upon a shaft 121 connected with the source of power. A belt shifter 122 is provided for shifting the belt 119 from the fast pulley 117 to the loose pulley 118, the belt shifter being shown for illustration mounted in stationary brackets 123, 124. A belt shifting spring 125 encircles the slide 122 between the stationary bracket 123 and a collar 126 fixed upon the slide 122, the spring 125 tending constantly to shift the slide 122 toward the right and move the belt 119 off the fast pulley 117 on to the loose pulley 118, thereby stopping the drive of the various parts of the mechanism. A latch 127 normally holds the slide 122 (against the tendency of the spring 125) in position to hold the belt 119 on the fast pulley 117; and when the latch 127 is lifted out of engagement with the slide 122, the spring 125 thrusts the belt and stops the machine.

The latch 127 may be pulled out of engagement with the slide 122 by an electro-magnet 130 in a normally open circuit including the battery 131 and having one terminal at the contact screws 132, 133, and the other terminal at a contact block 134 mounted upon the movable board 98. Thus, when the movable board 98 shifts either to the right or to the left upon the occurrence of an error, the circuit of the electro-magnet 130 will be closed and the latch 127 will be withdrawn, and the machine will be stopped.

Some sort of a signal to the operator may be employed instead of or in conjunction with a stop mechanism such as that described. For instance, the described electric circuit may include an electro-magnet 140 which, when energized, withdraws a latch 141 and permits a clapper 142 to descend

and strike a bell 143. With this arrangement a bell will be sounded whenever an error is detected.

It has already been explained that there is preferably a set of the pneumatics 95 and 99 and their associated parts, for each row of perforations to be inspected in the note sheet material 3. There is preferably also an electric circuit for each set of pneumatics 99, and each circuit may include a signal apparatus such as the magnet 140, clapper 142 and bell 143. Thus, whenever an error occurs in any given row of perforations in the note sheet material 3, that particular row may be indicated by the audible signal; and by investigating the positions of the various clappers 142, the operator may determine the exact row of perforations in the note sheet material 3 in which the error has occurred. Thus, the signal apparatus may serve the purposes of a visible signal or an audible signal or both.

It will be noted that the movable board 98 of the two pneumatics has a substantially free play between the two contact screws 132 and 133, and the extent of this play may be varied by adjusting the contact screws toward and from each other. By this arrangement the extent of error which may take place without being indicated, may be adjusted as desired, for instance, if a given perforation in the inspecting sheet 104 open the corresponding vent in the tracker 103 a small fraction of a second prior to the opening of the companion vent in the tracker 93 by its corresponding perforation, this slight difference may result in a movement of the pneumatic board 98 toward the left; and the adjustment of the screw 133 may be such that if the discrepancy referred to is negligible, the movement of the board 98 will not be great enough to close the circuit between the screw 133 and the contact plate 134. Therefore, the described apparatus is such that errors which are considered negligible may be permitted to occur, while all non-negligible errors are detected and indicated; and the apparatus is adjustable for the purpose of determining or varying the limit desired to be established between negligible and non-negligible errors.

It is to be understood that the construction, organization and mode of operation of the various parts described above have been disclosed merely by way of illustration; and the invention is not limited thereto. On the contrary, the several features of the invention may be variously modified within the scope of the sub-joined claims. It is not necessary that all the features of the invention be used conjointly since they may be used to advantage separately in various combinations and sub-combinations.

Claims:

1. A note sheet perforating machine com-

prising in combination punch selecting and driving mechanism including a pattern, means for presenting the note sheet material to the punching mechanism; means to detect a discrepancy between the punchings in the note sheet material and the pattern; and means operatively connected with said detecting means for stopping the punching upon detection of such discrepancy.

2. A note sheet perforating machine comprising in combination punch selecting and driving mechanism including a pattern, means for presenting the note sheet material to the punching mechanism; means to detect a discrepancy between the punchings in the note sheet material and the pattern; and means operatively connected with said detecting means for making a signal upon detection of such a discrepancy.

3. A note sheet perforating machine comprising in combination punch selecting and driving mechanism including a pattern; means to present note sheet material to the punching mechanism; and means to detect and indicate a discrepancy between punchings in the note sheet material and said pattern.

4. A note sheet perforating machine comprising in combination punch selecting and driving mechanism including a pattern; means to present note sheet material to the punching mechanism; inspecting means to cooperate with perforations made in the note sheet material; and means operatively connecting said inspecting means with the pattern, including means to indicate a discrepancy between the pattern and the perforations inspected by said inspecting means.

5. A note sheet perforating machine comprising in combination punch selecting and driving mechanism including a pattern; means to present note sheet material to the punching mechanism; a tracker to cooperate with perforations punched in the note sheet material; and means operatively connecting said tracker with the pattern, including means for indicating a discrepancy between the pattern and perforations in the note sheet material.

6. A note sheet perforating machine comprising in combination punch selecting and driving mechanism including a pattern; means to present note sheet material to the punching mechanism; and inspecting means having devices corresponding with perforations to be punched in the note sheet material; and means to indicate a discrepancy between said inspecting means and the perforations punched in the note sheet material.

7. A note sheet perforating machine comprising in combination punch selecting and driving mechanism including a pattern; means to present note sheet material to the punching mechanism; an inspecting sheet having perforations corresponding to those

to be punched in the note sheet material; and means operatively connected with the inspecting sheet and note sheet material for indicating discrepancies between perforations in the inspecting sheet and those punched in the note sheet material.

8. A note sheet perforating machine comprising in combination punch selecting and driving mechanism for predeterminately punching the note sheet material; means to present note sheet material to the punching mechanism; an inspecting sheet having perforations corresponding to those to be punched in the note sheet material; and means coöperating with the perforations in said inspecting sheet and the note sheet material and controlled by them conjointly to indicate discrepancies between perforations in the inspecting sheet and those in the note sheet material.

9. A note sheet perforating machine comprising in combination punch selecting and driving mechanism for predeterminately punching the note sheet material; means to present the note sheet material to the punching mechanisms; a sheet having perforations therein corresponding with perforations to be punched in the note sheet material; trackers to coöperate respectively with the perforations in said sheet and in the note sheet material; and mechanism connected to said trackers for indicating discrepancies between the perforations in said sheet and those in the note sheet material.

10. A note sheet perforating machine comprising in combination punch selecting and driving mechanism including a pattern; means to present note sheet material to the punching mechanism; inspecting means having devices corresponding to perforations to be punched in the note sheet material; and means operatively connected with the pattern, said inspecting means, and the note sheet material, for indicating a discrepancy between any two of the pattern, the inspecting means, and the perforated note sheet material.

11. A note sheet perforating machine comprising in combination punch selecting and driving mechanism including a pattern; selecting means having devices corresponding to perforations to be punched in the note sheet material; means to present note sheet material to the punching mechanism; and means operatively connecting the pattern, said inspecting means and the note sheet material, for indicating discrepancies between the pattern and the perforated note sheet material.

12. A note sheet perforating machine comprising in combination punch selecting and driving mechanism including a pattern; means to present note sheet material to the punching mechanism; inspecting means having devices corresponding to perforations to

be punched in the note sheet material; and means operatively connecting said pattern, said inspecting means and the note sheet material including indicating means operable upon occurrence of a discrepancy between the pattern and said inspecting means.

13. A note sheet perforating machine comprising in combination punch selecting and driving mechanism including a pattern; means to present note sheet material to the punching mechanism; inspecting means having devices corresponding to perforations to be punched in the note sheet material; and means operatively connecting said pattern, said inspecting means and the note sheet material including indicating means operable upon occurrence of a discrepancy between said inspecting means and the perforated note sheet material.

14. A note sheet perforating machine comprising in combination punch selecting and driving mechanism including a pattern and a tracker coöperating therewith; means to present note sheet material to the punching mechanism; a tracker coöperating with the note sheet material after the same has been perforated; an inspecting sheet and a tracker coöperating therewith; and means operatively connecting said last named two trackers and controlled by them conjointly, for indicating errors in perforations in the note sheet material.

15. A note sheet perforating machine comprising, in combination, punch selecting and driving mechanism including a pattern; means to present note sheet material to the punching mechanism; an inspecting means having devices corresponding to perforations to be punched in the note sheet material; and means operatively connecting the inspecting means and the perforated note sheet material including indicating means held substantially idle when perforations made in the note sheet material correspond to said devices of the inspecting means.

16. A note sheet perforating machine comprising, in combination, punch selecting and driving mechanism for predeterminately punching the note sheet material; means to present note sheet material to the punching mechanism; inspecting means having devices corresponding to perforations to be punched in the note sheet material; and a pneumatic indicating device having operative connection with the inspecting means and the note sheet material and conjointly controlled thereby.

17. A note sheet perforating machine comprising, in combination, punch selecting and driving mechanism for predeterminately punching the note sheet material; means to present note sheet material to the punching mechanism; and mechanism coöperating with the note sheet material to indicate an error in a punching operation.

18. A note sheet perforating machine comprising, in combination, a plurality of punches; means for causing the punches predeterminately to perforate the note sheet material; and means cooperating with the note sheet material to indicate an error in the punching operation and to indicate further the punch to which the error is attributable.
19. A note sheet perforating machine comprising, in combination, a plurality of punches; means for causing the punches predeterminately to perforate the note sheet material; and means cooperating with the note sheet material to indicate an error in the punching operation and to indicate further where in the note sheet material the error was committed.
20. A note sheet perforating machine comprising, in combination, punch-selecting and driving mechanism including a pattern; means to present note sheet material to the punching mechanism; an inspecting means having devices corresponding to perforations to be punched in the note sheet material; and means operatively connecting the inspecting means and pattern, including indicating means to indicate discrepancies between the inspecting means and pattern.
21. A note sheet perforating machine comprising, in combination, punching mechanism; a standard means, for comparison with perforated note sheet material, having devices corresponding to perforations to be made in the note sheet material; and mechanism to indicate the omission of an intended perforation in the note sheet material.
22. A note sheet perforating machine comprising, in combination, punching mechanism; a standard means, for comparison with perforated note sheet material, having devices corresponding to perforations to be made in the note sheet material; and mechanism to indicate the making of an unintended perforation in the note sheet material.
23. A note sheet perforating machine comprising, in combination, punching mechanism; a standard means, for comparison with perforated note sheet material, having devices corresponding to perforations to be made in the note sheet material; and mechanism to indicate the omission of an intended perforation and to indicate also the punch which failed to perforate.
24. A note sheet perforating machine comprising, in combination, punching mechanism; a standard means, for comparison with perforated note sheet material, having devices corresponding to perforations to be made in the note sheet material; and mechanism to indicate the making of an unintended perforation and to indicate also the punch which made the same.
25. A note sheet inspecting apparatus comprising, in combination, a standard means having devices corresponding to, and for comparison with, the perforations in the note sheet; and mechanism for comparing the standard means and the perforated note sheet and to indicate discrepancies therebetween.
26. A note sheet inspecting apparatus comprising, in combination, a standard sheet, for comparison with the note sheet, having perforations corresponding to those of the note sheet; and means cooperating with corresponding perforations in the two sheets for indicating discrepancies therebetween.
27. A note sheet inspecting apparatus comprising, in combination, a standard sheet, for comparison with the perforated note sheet, having perforations corresponding to those in the note sheet; and pneumatic means controlled by said sheets conjointly for indicating discrepancies between the perforations in said sheets.
28. A note sheet inspecting apparatus comprising, in combination, a standard sheet, for comparison with the perforated note sheet, having perforations corresponding with those of the note sheet; means providing tracker vents to cooperate with the perforations in said sheets; and means operatively connected with said tracker vents for indicating discrepancies in the perforations in the respective sheets.
29. A note sheet inspecting apparatus comprising, in combination, a standard sheet, for comparison with the perforated note sheet, having perforations corresponding with those of the note sheet; a tracker cooperating with each said sheet; and means operatively connecting said trackers including indicating means for indicating discrepancies between perforations in the respective sheets.
30. A note sheet inspecting apparatus comprising, in combination, a standard means for comparison with a perforated note sheet, having devices corresponding to the perforations of the note sheet; mechanism to compare said standard means and the note sheet and indicate discrepancies therebetween; and means to adjust the extent of discrepancy which may occur without being indicated.
31. A note sheet inspecting apparatus comprising, in combination, a standard means, for comparison with the perforated note sheet, having devices corresponding to perforations in the note sheet; and mechanism to compare the standard means and the note sheet and to indicate discrepancies therebetween exceeding in extent a predetermined maximum.
32. A note sheet inspecting apparatus comprising, in combination, a standard means, for comparison with the perforated note sheet, having devices corresponding to perforations in the note sheet; mechanism to

compare the standard means and the note sheet and to indicate discrepancies therebetween exceeding in extent a predetermined maximum; and means for varying said predetermined maximum extent of discrepancy.

33. A note sheet perforating machine comprising, in combination, punch-selecting and driving mechanism for predeterminedately punching the note sheet material; means to present note sheet material to the punching mechanism; and means to detect and indicate discrepancies beyond a predetermined maximum, between perforations in the note sheet material and said pattern.

34. A note sheet perforating machine comprising, in combination, punch-selecting and driving mechanism for predeterminedately punching the note sheet material; means to present note sheet material to the punching mechanism; means to detect and indicate discrepancies beyond a predetermined maximum, between perforations in the note sheet material and said pattern; and means for varying said predetermined maximum.

35. In a machine of the character de-

scribed, the combination of a pattern; means to reproduce the pattern; a standard reproduction of the pattern; and means to compare the reproductions with the standard.

36. In a machine of the character described, the combination of a pattern; means to reproduce the pattern; a standard reproduction of the pattern; and means to indicate discrepancies between the pattern and the reproductions.

37. In a machine of the character described, the combination of a pattern; means to reproduce the pattern; a standard reproduction of the pattern; and means to stop the reproducing means upon the occurrence of any discrepancies between pattern and reproductions.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES F. STODDARD.

Witnesses:

LOUIS A. JONES,

GUY M. RUSSELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."