

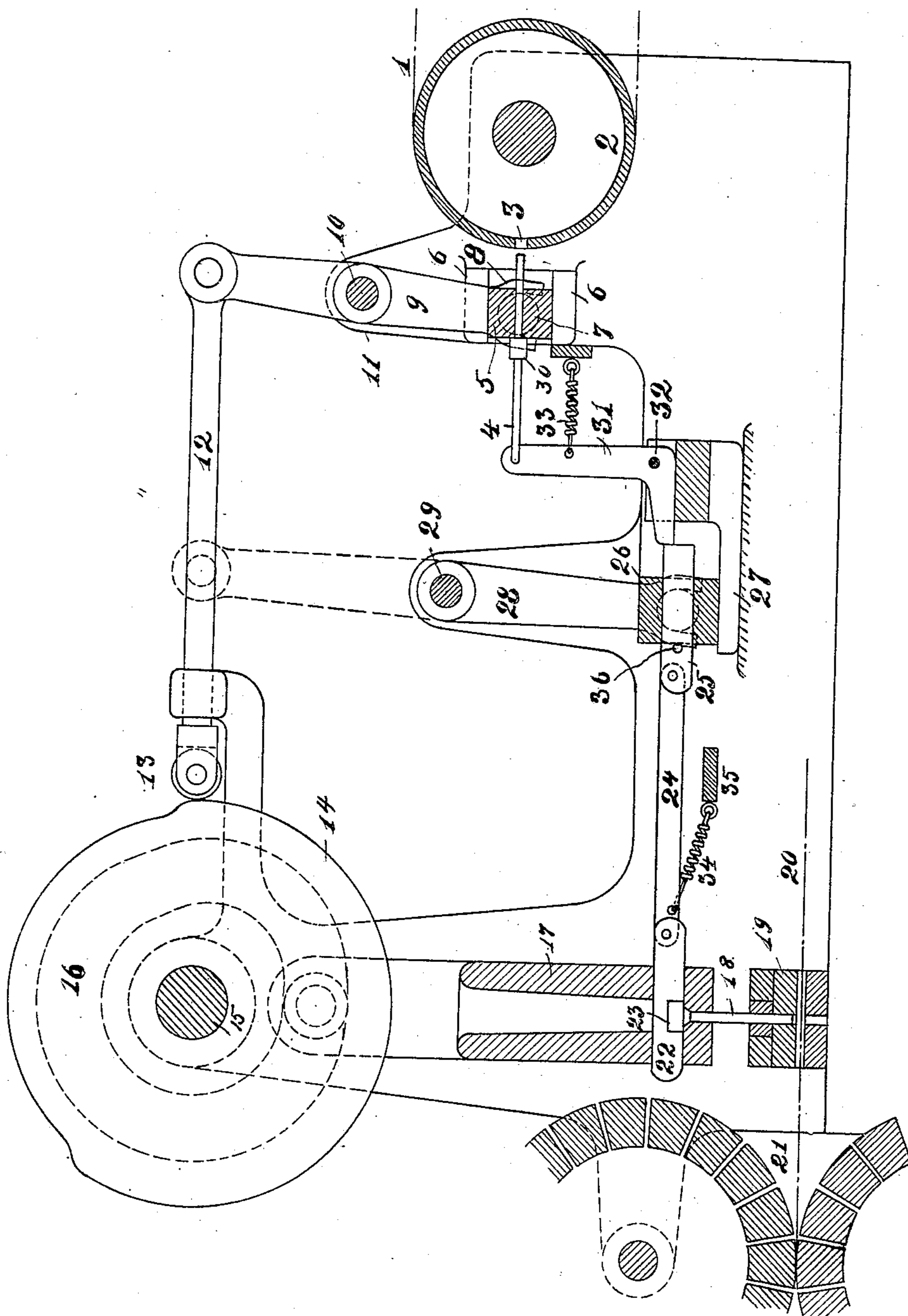
No. 886,455.

PATENTED MAY 5, 1908.

F. L. WOOD.

MACHINE FOR MAKING PERFORATED MUSIC SHEETS.

APPLICATION FILED DEC. 12, 1907.



WITNESSES:

Marion Hall
May 9. 1911

INVENTOR
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UNITED STATES PATENT OFFICE.

FREDERICK L. WOOD, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO AEOLIAN COMPANY,
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MACHINE FOR MAKING PERFORATED MUSIC-SHEETS.

No. 886,455.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed December 12, 1907. Serial No. 406,149.

To all whom it may concern:

Be it known that I, FREDERICK L. WOOD, a citizen of the United States, and a resident of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Perforated Music-Sheets, of which the following is a specification.

This invention relates to improvements in machines for making perforated music sheets and the object of my invention is to provide a new and improved machine for this purpose, which is simple in construction, reliable and quick in action and permits of using a master sheet made of light paper without incurring danger of mutilating or tearing the master sheet by the selector pins, thus greatly reducing the size, cost and bulk of the master sheets.

In the accompanying drawings a vertical longitudinal sectional view of one embodiment of my new and improved perforating machine is shown, parts being broken away and others, the details of which are not essential to the understanding of the machine, being omitted. The master sheet 1, shown in dotted lines, is moved by any suitable well known feed mechanism, (not shown) over a fixed cylinder 2 having a horizontal row of apertures 3 for receiving the free ends of the selector pins 4 after they have passed through corresponding holes in the master sheet 1. The selector pins pass freely through holes in a horizontal bar 5 parallel with the cylinder 2 and mounted on horizontal guides 6 to move toward and from the cylinder 2. An end pin 7 on the bar, shown in dotted lines, is embraced by a fork 8 on the lower end of a lever 9 pivoted at 10 on a standard 11 of the machine frame and having its upper end pivotally connected with a horizontally guided rod 12 carrying a roller 13 running on the cam edge of a cam disk 14 mounted on the shaft 15 which cam disk is provided in one side face with the cam track 16 for operating the vertically guided and reciprocating punch head 17 carrying loosely at its lower end punches 18 which are guided in the die 19, through a horizontal opening of which the sheets 20, to be perforated, shown in dotted lines, are passed to the feed rollers 21 of suitable construction and operation.

Over each punch 18 in the punch head 17 a horizontally adjustable punch controlling

slide 22 is mounted and is provided in its bottom edge with a recess 23 and is pivotally connected with a connecting rod 24, which, at its opposite end is pivotally connected with a slide 25 guided to move horizontally through a cross bar 26 parallel with the punch head and guided by a guide 27 to move horizontally toward and from the punch head.

The bar 26 is moved horizontally by a lever 28 pivoted at 29 and suitably operated by a cam disk (not shown) on the shaft 15. Each selector pin 24 is provided with a collar 30 at the left hand side of the bar 5 and each selector pin is pivotally connected with one end of an angle lever 31 pivoted at 32, to which angle lever and the frame of the machine a very light spring 33 is attached which tends to press the collars 30 of the several selector pins against the left hand face of the bar 5. The free end of the other arm of the angle lever 31 rests loosely against the right hand end of the corresponding slide 25, near the upper right hand corner of said slide. Each slide 25 is provided with a stud or projection 36 which is pressed upon the left hand face of the bar 26 by a light spring 34 attached to the part 35 of the frame of the machine and to the corresponding connecting bar 24. When the roller 13 runs upon that part of the edge of the cam disk 14 having the smaller radius, the several springs 33 acting on the several angle levers 31 and the pins 4 connected therewith, by means of the collars 30 of the selector pins, push the bar 5 to the right and the free ends of the selector pins 4 come in contact with that part of the master sheet resting on the face of the cylinder 2 and those pins 4 that encounter a hole in the master sheet registering with a hole 3 in the cylinder 2 are moved still further to the right by the corresponding spring 33, and press the bar 5 correspondingly to the right without however shifting those selector pins that have not encountered a hole in the master sheet.

The lever 31 of each selector pin that has encountered a hole of the master sheet is tilted upward sufficiently to disengage its lower left hand end from the slide 25 which slide 25 is thus unlocked permitting the corresponding spring 34 to move the bar 24 and punch controlling slide 22 connected therewith to the right, whereby the slide 22 is shifted sufficiently to bring its solid portion

over the corresponding punch 18 so that when the punch head descends its punch is depressed and perforates the paper. The friction between the abutting and engaged ends of the slide 25 and angle lever 31 is so great that a comparatively powerful spring is required to disengage the slide 25 and the angle lever 31, that is, to tilt the angle lever. Such a powerful spring however would cause the selector pins to tear the master sheet. So as to permit of using a very light spring 33 the friction between the abutting ends of the slide 25 and the angle lever 31 must be reduced to a minimum or removed altogether at such time when the selector pins are to be passed through the master sheet. The movement of the bar 26 is so timed that an instant before the selector pins are to be moved toward the master sheet the bar 26 is moved to the left slightly and acting on the studs or projection 36 of the slides 25 moves said slides to the left sufficiently to destroy contact between the right hand ends of the slides and the front ends of the angle levers 31 so that no friction whatever need be overcome during the tilting movements of the angle levers 31.

The springs 33 need not overcome any friction whatever and only need have sufficient power to press the selector pins toward the master sheet. After each punching operation the bar 5 is moved to the left as the roller 13 runs upon that part of the cam 14 having the greater radius and as the bar 5 acts on the collars 30 of the selector pins 4 all the angle levers 31 are brought into normal position, the slides 25, connecting rods 24 and slides 22 having just previously been brought into their original position by the lever 28 and bar 26 and the notches 23 of all slides 22 will now again be over the punches 18. The angle levers 31 thus lock the punch controlling slides and prevent movement of the same until the angle levers 31 have been lifted out of the paths of the slides 25.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a machine for perforating paper sheets, controlled by a master sheet, the combination with a punch selector pin movable toward and from the master sheet, a spring acting on the pin to move the same toward the master sheet, a punch controlling slide controlled by the selector pin and means for disengaging the punch controlling slide from the selector pin or its accessories, substantially as set forth.

2. In a machine for perforating paper sheets, controlled by a master sheet, the combination with a punch head, a punch adapted to be depressed by the head, a punch controlling slide in the head, a selector pin movable toward the master sheet, a spring for so moving the selector pin, a locking means for

the punch controlling slide, which locking means is connected with the selector pin, means for liberating the selector pins to permit movement toward the master sheet and means for disengaging the punch controlling slide and its locking means just before the selector pins are liberated, substantially as set forth.

3. In a machine for perforating paper sheets, controlled by a master sheet, the combination with a punch head, punches in the same, a punch controlling slide in the head for each punch, a selector pin, means for holding the selector pins in inoperative position, a locking means for each punch controlling slide, which locking means is connected with the selector pin, and means for disengaging the punch controlling slide and its locking means just before the selector pin is released, substantially as set forth.

4. In a machine for perforating paper sheets, controlled by a master sheet, the combination with a punch head, punches therein and a punch controlling slide for each punch in the punch head, of a selector pin for each slide in the punch head, a locking device for the punch controlling slide, connected with the selector pin, means for holding the selector pins in inoperative position, means for positively disengaging the punch selector slide from the locking means directly before the selector pin is released from its inoperative position, substantially as set forth.

5. In a machine for perforating paper sheets, controlled by a master sheet, the combination with a punch head and punches, of a punch controlling slide in said head for each punch, a selector pin, a spring for moving it toward the master sheet, an angle lever connected with the selector pin, one end of the angle lever abutting against the end of the punch controlling slide, means for holding the selector pin in inoperative position and means for moving the punch controlling slide away from the adjacent end of the angle lever directly before the selector pin is released from its inoperative position, substantially as set forth.

6. In a machine for perforating paper sheets, controlled by a master sheet, the combination with a punch head and punches therein, a punch controlling slide for each punch, a bar movable toward and from the punch head, through which bar the punch controlling slides pass freely, a projection on each slide at one side of said bar, an angle lever at the inner end of each punch controlling slide and in the path of the same, a selecting pin connected with the angle lever and a spring acting on the selecting pin, substantially as set forth.

7. In a machine for perforating paper sheets, controlled by a master sheet, the combination with a punch head and punches therein, a punch controlling slide for each

punch, a bar movable toward and from the punch head through which bar the punch controlling slides pass freely, a projection on each slide at one side of said bar, an angle
5 lever at the inner end of each punch controlling slide and in the path of the same, a selecting pin connected with the angle lever and a spring acting on the selecting pin, means for moving the selecting pins and their
10 angle lever into normal position against the

action of the springs acting on said pins and their angle levers, substantially as set forth.

Signed at Worcester in the county of Worcester and State of Massachusetts this 2nd day of Dec. A. D. 1907.

FREDERICK L. WOOD.

Witnesses:

ARCHER J. NUTTING,
ALBERT A. WILDER.