

(No Model.)

2 Sheets—Sheet 1.

G. W. INGALLS.
MECHANICAL MUSICAL INSTRUMENT.

No. 266,036.

Patented Oct. 17, 1882.

Fig. 1.

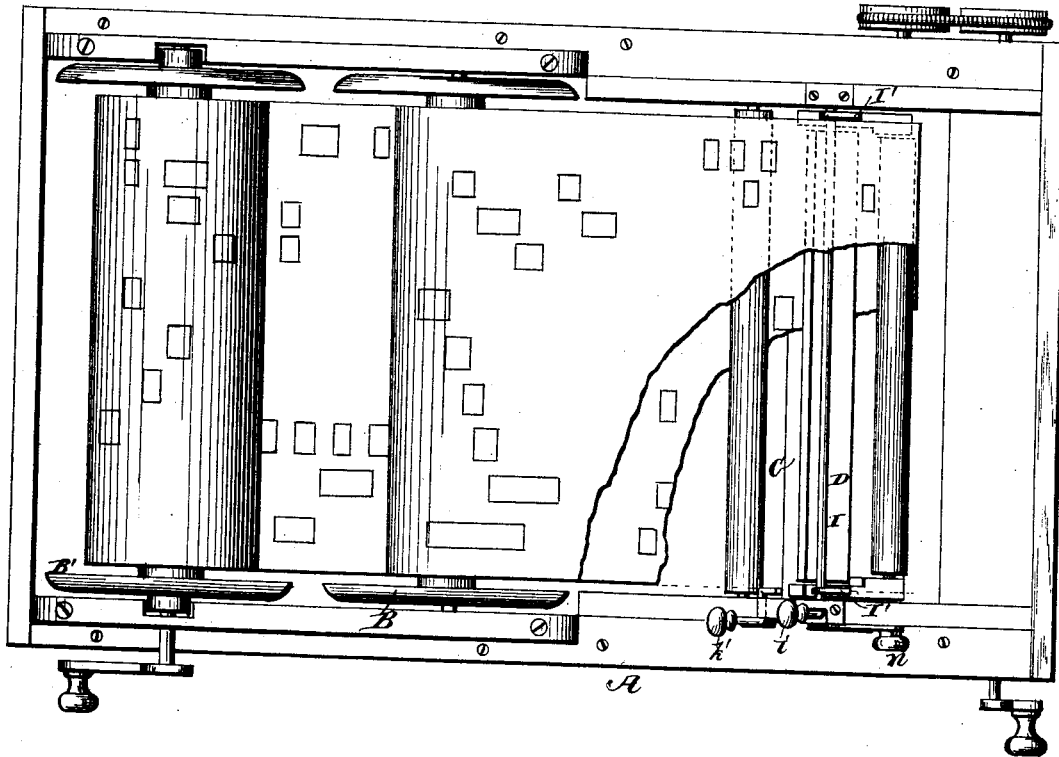
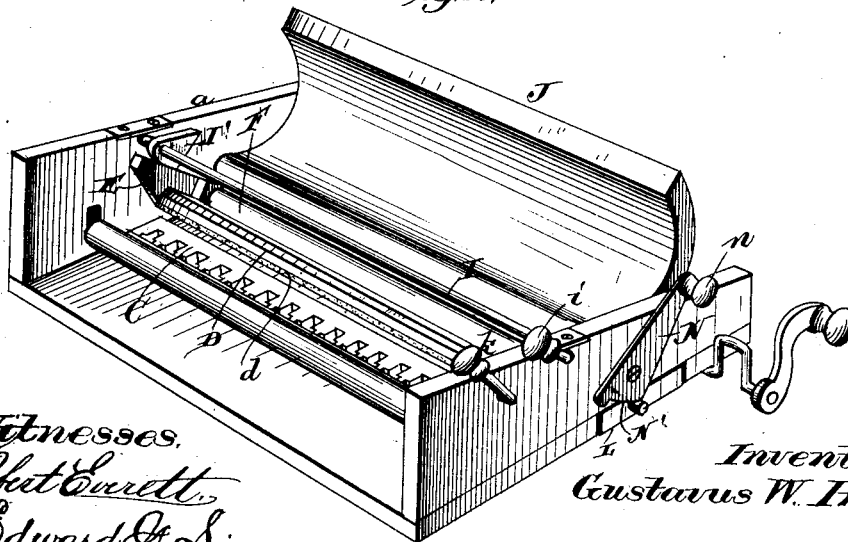


Fig. 2.



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(No Model.)

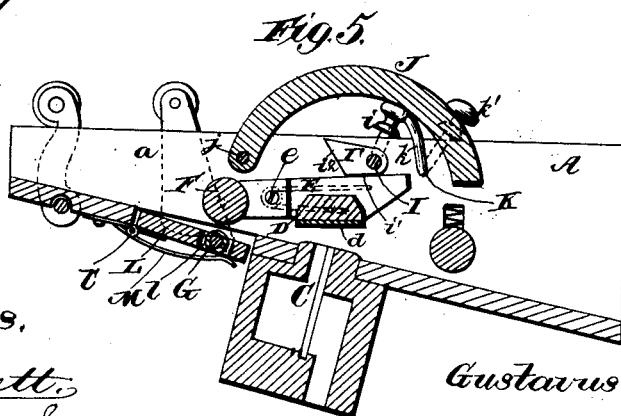
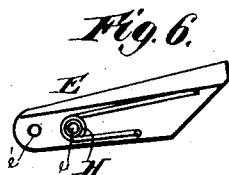
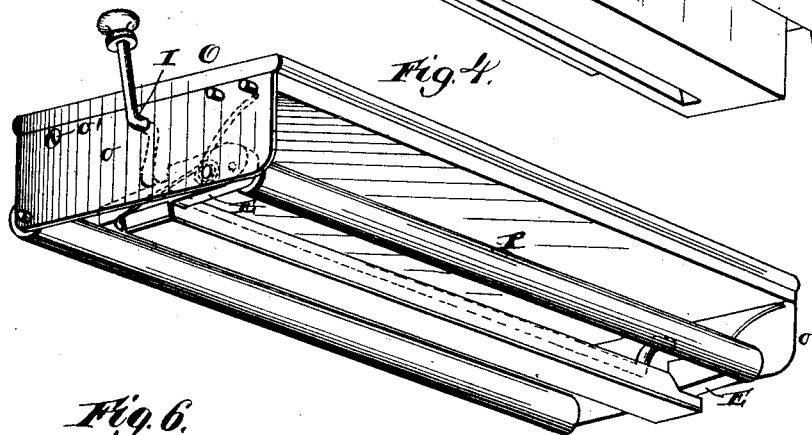
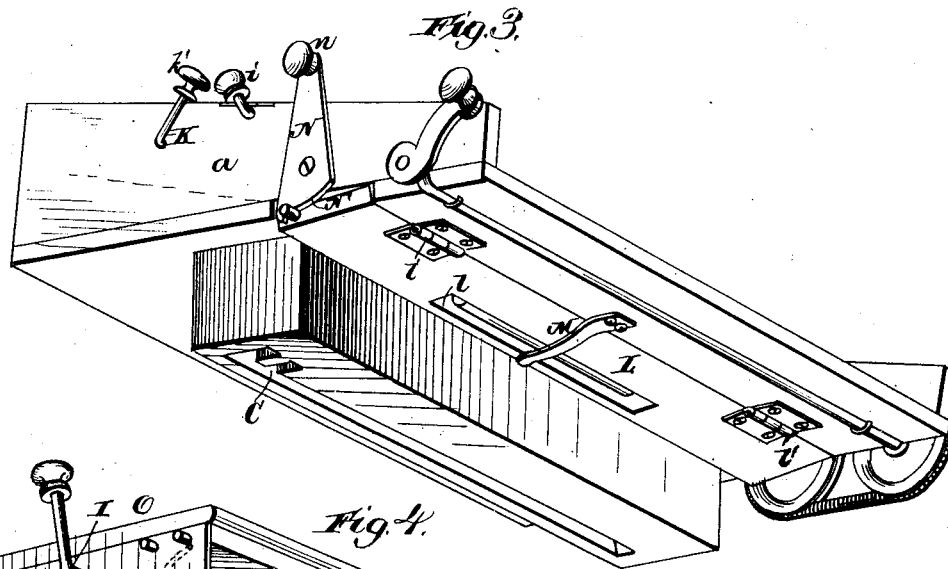
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UNITED STATES PATENT OFFICE.

GUSTAVUS W. INGALLS, OF WORCESTER, MASSACHUSETTS.

MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 266,036, dated October 17, 1882.

Application filed June 16, 1882. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVUS W. INGALLS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Automatic Musical Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates especially to devices for controlling the emission of sound from the reeds of automatic musical instruments, and to devices for controlling the position of the feed-rolls employed therein.

The said invention consists partly in the combination, with a reed-board, of a valve-bar for closing the reed-ducts and a crank-shaft for holding said bar against the mouth of said ducts by positive pressure.

It also consists in the combination, with the foregoing elements, of springs which tend to force said bar away from said reed-board.

It also consists in a pair of pivoted arms having the valve-bar attached thereto on one side of the pivot and the upper feed-roll on the other side thereof, in combination with devices, hereinafter described, whereby both said attached parts may be held above the paper, or either of them may be held down on the paper and the other up.

It also consists in the combination of a lower feed-roll which is adapted to be moved away from the upper feed-roll with a lever having a cam-face which is adapted to bear against a journal of the said lower feed-roll to depress the same.

It also consists in other details of construction and combination hereinafter set forth and claimed.

The nature of my various improvements will be hereinafter fully described, and more precisely pointed out in the appended claims.

In the accompanying drawings, Figure 1 represents a plan view of an automatic musical instrument embodying my invention, the music sheet being partly broken away and curved

swell-board having been removed. Fig. 2 represents a detail perspective view of the reed-board, the valve for closing the same, the movable upper feed-roll, and proximate devices, the swell-board having been turned back. Fig. 3 represents a detail perspective view, taken from below, of the devices for raising and lowering the lower feed-roll. Fig. 4 represents a detail perspective view of a cap or rack, to which the upper feed-roll, the outer valve, and adjacent parts are attached by means of removable plates. Fig. 5 represents a vertical longitudinal section through Fig. 2, and Fig. 6 represents a detail view of one pivoted arm and its spring.

A designates the top of the casing of the instrument.

B B' represent the winding and rewinding rolls for the music-sheet, attached to said top on one end thereof; and C designates the reed-board, attached to said top near the other end thereof, and extending up through it in the usual manner, so that the mouths of the reed-ducts may be opened and closed by the music-sheet, which passes over them and operates as a valve. It sometimes, however, is desirable to use an additional valve which will close all the ducts together and prevent the emission of sound until it is removed. For this purpose I employ a valve-bar, D, which is suitably faced with soft material *d* on its under side and journaled above said reed-board to a pair of pivoted arms, E, on one side of the pivots of said arms. To said arms on the other side of pivots *e* the upper feed-roll, F, is journaled, one of the bearing-holes for the journals of said upper feed-roll being shown in Fig. 6 and marked *e'*. Below it, as usual, is the other feed-roll, G. Springs H (shown in Fig. 6) bear against arms E, so as to force said upper feed-roll against said lower feed-roll and raise valve-bar D above the mouths of the reed-ducts. This is the position the parts assume during the operation of playing or making music.

I designates a rock-shaft journaled in the side walls of said casing-top A, and provided with an upwardly-turned handle, *i*, and a pair of triangular cams, I' I', the last being arranged to bear on the tops of the two arms E, respectively. These cams are arranged above the ends of arms E, to which valve-bar D is at-

tached. Hence when turned so as to bear thereon they tend to force said valve-bar toward the reed-board and to raise said upper feed-roll. When said handle *i* is turned down to the right said cams do not act on said arms, and the parts then occupy the position above described. When said handle is turned into an upright position the sides *i' i'* bear against arms E and hold them firmly in such position that the upper feed-roll and the valve-bar aforesaid are both raised above the top of the instrument-casing, so that the music-sheet may be withdrawn without impediment. When handle *i* is turned down to the left the points *i''* of said cams force the valve-bar tightly against the mouths of the reed-ducts and lock it there, completely closing the same until the handle *i* is turned in the other direction. The journaled attachment of the valve-bar to its arms E allows it to automatically adjust itself so as to fit snugly and exactly upon the mouths of the reed-ducts. When the reed-ducts have thus been closed the mechanism of the instrument may be operated, exhibited, and tested without making a sound. When an automatic instrument is combined with a key-organ the valve-bar thus constructed and applied will be found very serviceable in rendering the automatic devices inoperative, when so desired, by stopping the mouths of the reed-ducts belonging to the reeds of the automatic part of the instrument. As already described, it can easily be thrown into position to allow the removal of the music-sheet without the least obstruction.

J designates a curved sounding-board or swell-board, provided at its corners nearest the feed-rolls with gudgeons *j*, whereby it is journaled to the side walls, *a a*, raised on top of the casing, the axial line thereof being above that of the feed-rolls. When said sounding-board is turned down it forms a kind of inclosing cap for the space above the reed-board, and is in contact with a crank-arm, *k*, formed on the inner end of a bent bar, K, having a handle, *k'*, and journaled in one of said side walls, *a*. By vibrating said handle said sounding-board will be caused to vibrate also on its gudgeons, giving a similar vibratory character to the musical sounds emitted; or it may simply be allowed to remain in its lowest position, thereby acting as a sounding-box. This sounding-board or swell-board may be readily turned back on its journals out of the way when not needed.

L designates a board or trap-door, slotted at *l* to receive the lower feed-roll, G, which is journaled therein. Said board or trap-door forms a part of the casing-top A, and is hinged at *l'* on one side to the body of said top, so as to be capable of opening downwardly, and thereby separating the lower feed-roll from the upper one. A spring, M, forces said hinged part L up even with the remainder of top A and holds lower feed-roll, G, firmly against the upper feed-roll, F, though with a yielding pressure. On the side of the casing is an upright lever, N, of

the first kind, which is provided at its upper end with a handle, *n*, and at its lower end with an operating cam-face, N', that bears against the top of a projecting journal of said lower feed-roll, G. When said lever is turned in one direction its cam-face forces down said lower feed-roll.

In Fig. 4 a hinged rack, O, is shown, similar in construction and operation to that shown in a prior application of my own now pending before the United States Patent Office, but differing in this, that the sides of the rack are detachable metallic strips or plates *o*, held to the top of the rack by screws *o'*. To these plates the arms E, presser bar or roll P, and crank-shaft or cam-shaft I are all attached, so that when these plates are removed from the top of the rack all the operating parts belonging to the rack are removed also. In this case the shaft I is modified by making a broad double crank throughout nearly its whole length. When turned until this crank is upright it will lock the valve-bar D firmly against the mouths of the reed-ducts. The plates *o* obviously serve as a more secure attachment and bearing for the journals or gudgeons of the cam or crank shaft, presser-roll, arms E, and the pivots of said rack. The upper feed-roll, when not used with the arms E, may also be attached to said plates. It is obvious that the said plates protect the rack from being worn at the sides by the continual but necessary removal of the rack from the instrument; and, as stated above, they enable the presser-roll and the other devices referred to above to be removed from the rack by the removal of the plates, thereby accomplishing in a few moments what formerly took a considerable time to do. The plates can be readily attached to the rack by means of the screws.

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

1. In combination with a reed-board, a valve-bar for closing the reed-ducts, and a crank-shaft for holding said bar against the mouths of said ducts by positive pressure.

2. In combination with a reed-board and a valve-bar for closing the mouths of the reed-ducts, a cam-shaft for holding said bar against the mouths of said ducts by positive pressure, and springs which tend to force said bar away from said reed-board.

3. A pair of pivoted arms, E, and a transverse valve-bar attached thereto on one side of the pivots, in combination with a reed-board and a cam-shaft, the cams on said shaft being arranged to bear against said arms when said shaft is suitably turned, and adapted to lock said bar positively against the mouths of the reed-ducts.

4. A pair of pivoted arms, E, in combination with valve-bar D, which is journaled thereto, a reed-board, and a crank-shaft which forces said valve-bar against the mouths of the reed-ducts.

5. A valve-bar journaled in pivotal supports,

in combination with a reed-board and devices for moving said bar and supports toward and from said reed-board.

5 6. A reed-board, a valve-bar for closing the reed-ducts, and pivoted supports for said bar, in combination with a feed-roll, also mounted on said supports and on the other side of the pivots, and a rock-shaft, cams, and springs operating to lock down either said feed-roll or
10 said valve-bar, as described.

7. A pair of pivoted arms provided on one side of their pivots with a valve-bar and on the other with a feed-roll, in combination with springs for forcing said roll down and said
15 valve-bar up, and a rock-shaft provided with cams which are adapted to lock said valve-bar down and said feed-roll up, or to lock both of them in a raised position, as set forth.

20 8. An upper feed-roll for an automatic musical instrument, journaled to a pair of pivoted arms, in combination with a cam-shaft operat-

ing on said arms to positively raise the upper feed-roll from the lower feed-roll, substantially as set forth.

9. A pair of pivoted arms, E, in combination 25 with a roll journaled to one end of each of said arms and a cam-shaft operating on the other end of said arms to raise said roll.

10. Pivoted lever or bar N, having a cam-face, N', on its lower end, in combination with 30 a lower feed-roll, which is movable away from the upper feed-roll, said cam-face being arranged to bear upon a protruding part on the shaft of said roll and to depress the same, substantially as set forth.

35 In testimony whereof I affix my signature in presence of two witnesses.

GUSTAVUS W. INGALLS.

Witnesses:

FRANK A. BEANE,
J. W. FARNSWORTH.