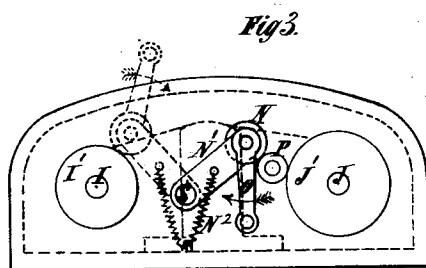
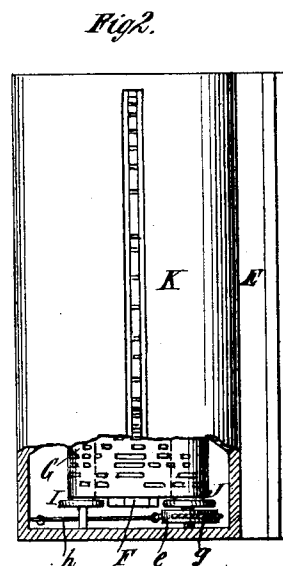
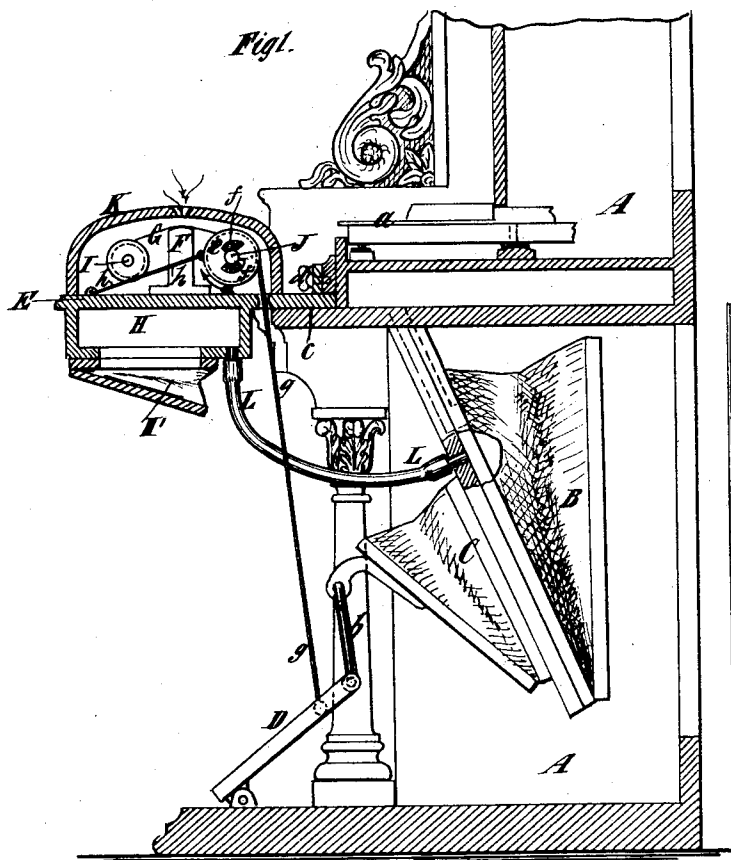


(No Model.)

E. P. & C. A. NEEDHAM.
MECHANICAL MUSICAL INSTRUMENT.

No. 244,922.

Patented July 26, 1881.



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UNITED STATES PATENT OFFICE.

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MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 244,922, dated July 26, 1881.

Application filed April 2, 1881. (No model.)

To all whom it may concern:

Be it known that we, ELIAS P. NEEDHAM and CHARLES A. NEEDHAM, both of the city and county of New York, in the State of New York, have invented certain new and useful Improvements in Mechanical Attachments or Appendages for Wind Musical Instruments, of which the following is a specification.

The principal object of our invention is to provide an attachment or appendage comprising sound-producing devices controlled by a traveling music card or tablet, which may be connected with the wind-chest or air-inducing devices of a wind musical instrument, so as to dispense with separate devices for inducing air for the operation of the attachment or appendage.

The invention consists in an attachment or appendage for a wind musical instrument comprising sound-producing devices, a rest for a traveling music card or tablet, a wind chest or channel, and a case adapted to be arranged and supported in front of the manual key-board of said instrument, in combination with means for connecting the wind chest or channel of said attachment or appendage with the wind-inducing devices of said instrument, whereby provision is afforded for operating the sound-producing devices of the instrument manually, in the ordinary way, for operating the attachment or appendage mechanically, or for operating both the instrument and the attachment or appendage simultaneously.

It also consists in the combination, with an attachment or appendage comprising sound-producing devices, a rest for a traveling music card or tablet, a roller upon which said music card or tablet may be wound, and a wind chest or channel, of means for connecting said wind chest or channel with the wind-chest of a musical instrument and means for connecting said roller with the treadle of said instrument to effect the rotation of said roller and the travel of the music card or tablet.

The invention also consists in the combination, with an organ or other wind musical instrument, of an attachment or appendage of the kind above described attached to the case of said instrument and connected with the wind chest or channel thereof, as hereinafter fully described.

It also consists in the combination, with sound-producing devices and music and take-up rollers for a traveling music-sheet for controlling the operation of said sound-producing devices, each of said rollers having a wheel, of a driving-shaft and driving-wheel and a swinging bearing for said shaft mounted upon a stationary pivot and adapted to be adjusted to cause the driving-wheel to engage with the wheel of either roller to impart motion thereto. We also combine with said swinging bearing-block a spring for holding it in either position to which it is adjusted.

In the accompanying drawings, Figure 1 represents a side elevation, partly in section, of a portion of an organ, and a transverse section of an attachment or appendage embodying our invention connected therewith. Fig. 2 represents a plan of the attachment or appendage alone, with a portion of the cover broken away to expose the parts beneath; and Fig. 3 represents an end view of an attachment or appendage with a modified form of mechanism for rotating its music-roller and take-up roller.

Similar letters of reference designate corresponding parts in all the figures.

A represents an organ or other wind musical instrument, and *a* designates the key-board thereof, whereby the instrument may be played manually.

B designates the wind chest or receiver of the instrument, and C the bellows for inducing air to operate the sound-producing devices, and which are actuated by a rod, *b*, from the treadle D in a well-known manner.

The instrument A in itself is not different from many in common use.

We will now describe the appendage or attachment, represented as secured to the front of the instrument.

E designates a base board or piece, upon the upper side of which is erected a reed-board, F, the top of which forms a rest for a traveling music card or tablet, G, which may consist of a perforated sheet of paper. The reed-board F is constructed with reed-cells, in which are inserted reeds of different pitch, and below the base board or piece E is an air-tight wind-chest, H, with which all the reed-cells in the reed-board F communicate, and hence it will be un-

derstood that if the air be exhausted from the wind-chest H and the apertures in the reed-board F are not covered by the music-sheet the reeds will be caused to speak.

5 Upon one side of the reed-board F is represented a music-roller, I, upon which the music-sheet is wound preparatory to playing, and upon the opposite side of said reed-board is a take-up roller, J, to which the free end of the
10 music-sheet is attached, and by the rotation of which the music-sheet is unwound from the music-roller I, drawn over the reed-board F, and finally wound upon the take-up roller J itself.

15 In this example of our invention the base board or piece E is sufficiently wide for a whole or a part of its length to project over and rest upon the case of the instrument A at *c*, and is provided with screws *d*, clamps, or other devices, which provide for its ready removal from
20 the instrument when not desired for use.

In lieu of the attachment or appendage being secured to the case of the instrument A, as here shown, it might be held in the lap or supported by a table or stand.

25 The top of the attachment or appendage may be concealed by a cover, K, which is provided with openings for the free inflow of air.

In order to improve and steady the tone of
30 the reeds in the attachment or appendage, we may provide the wind-chest H with an expansible portion, H', as seen in Fig. 1, or the same result might be obtained by providing in the bottom or side of the wind-chest a flexible or
35 yielding diaphragm of rubber or other suitable material. By alternately and quickly pressing upon and releasing the expansible portion or diaphragm with the hand or otherwise a tremolo effect may be produced at the will of
40 the performer. The attachment or appendage has itself no devices for inducing air; but the wind-chest H is connected by a flexible pipe, L, or other passage or conduit with the wind-chest B of the instrument, and is exhausted
45 of air through said wind-chest B. In this instance the bellows C are exhaust bellows; but if pressure-bellows were substituted the music-sheet should be inclosed in an air-tight case, with which the flexible pipe L communicates, and the wind-chest H should communicate with the atmosphere. One important advantage of attaching it to the case of the instrument A, as shown, is that the said roller
50 J may be rotated by devices transmitting motion from the treadle D, as shown in Fig. 1.

55 Upon one end of the take-up roller J or the shaft thereof is loosely fitted a drum, *e*, in the central hole or opening of which are inclined slots or recesses containing rollers *f*, the said
60 slots or recesses being so constructed that when the said drum is turned in the direction of the arrow, Fig. 1, it will impart motion to the roller J, but when turned in the opposite direction will run freely.

65 To the drum *e* is attached a cord, strap, or other flexible connection, *g*, which is attached

at its lower end to the treadle D, and hence each downward movement of the treadle will turn the drum *e* and with it the roller J.

In order to turn the drum *e* backward to
70 take a new hold when the treadle rises, we may employ a rubber strap, *h*, or other spring, attached to the drum *e*, and extending in the opposite direction to the flexible connection *g*.

In reed-organs there is commonly an air or
75 wind chamber directly under the key-board; and in lieu of attaching the wind-chest H to the under side of the base board or piece E, said board or piece might be constructed with a wind channel or channels communicating
80 with the reed-cells in the reed-board F, and the said base board or piece might be inserted through a longitudinal slot in the organ-case into the wind-chamber below the key-board; but in any case the wind chest or chan-
85 nel of the attachment or appendage is connected with the wind-inducing apparatus of the instrument, and is supplied with or exhausted of air thereby.

In Fig. 3 we have represented a modified
90 form of apparatus for rotating either the music-roller I or the take-up roller J, which may be employed when the take-up roller J is not rotated from the treadle D, as in Fig. 1.

Upon the adjacent ends of the music-roller
95 I and take-up roller J, or their shafts, are fixed wheels I' J', and at the same end of the attachment or appendage is a driving-wheel, N, the shaft of which may be rotated by a crank, *o*. The driving-wheel N is rotated in bear-
100 ings in a piece or block, N', which is pivoted or fulcrumed upon a stationary pin, *s*, to the case of the attachment or appendage, so that it may be readily swung from the position shown in full outline to that shown in dotted
105 outline, or vice versa. The flanges of the two rollers I J might constitute the wheels I' J'.

When the bearing block or piece N' is adjusted into the position shown in full outline the wheel N is in contact with an idler-wheel,
110 P, and through this idler-wheel rotary motion is transmitted from the driving-pulley N to the wheel J' on the take-up roller J and feeds the music-sheet G forward for playing. When the bearing block or piece N' is adjusted into the
115 position shown in dotted outline the driving-wheel N is brought into engagement with the wheel I' on the music-roller, and said roller is rotated to rewind the music-sheet. In either position to which it may be adjusted the bear-
120 ing block or piece is drawn down by a spring, N², or held down by a latch or catch, to cause the driving-wheel N to engage effectively with the wheel, to which it imparts motion, and in order to increase their frictional contact cer-
125 tain of the wheels might be covered with india-rubber.

Frequently the hand cranks employed for rotating the music or take-up rollers in instru-
130 ments the operation of which is controlled by a traveling music-sheet are screwed onto their shafts, so that they may be readily taken off

when not required, and the idler-wheel P is employed to enable the crank O to be always turned in one direction. If the crank were affixed to its shaft so as to be turned equally well in either direction, the wheel P might be dispensed with and the driving-wheel N made to engage directly with the wheel J' on the take-up roller J. Indeed, the wheels I', J', and P might all be omitted in some cases and the driving-wheel N be brought directly into engagement with the take-up roller or the music-roller.

It is also evident that if the crank O were dispensed with the drum e, (shown in Figs. 1 and 2,) together with its inclined slots and rollers f, might be placed on the shaft of the wheel N, and motion might then be imparted from the treadle D directly to the shaft of the driving-wheel N.

By our invention we provide for inducing air for the operation of the reeds of the attachment or appendage and the operation of the organ or other instrument to which said attachment or appendage is applied, as well as the feed or travel of the music-sheet, without modification of the instrument, by the use of an attachment or appendage which may be made at a small cost and readily attached to the instrument or removed therefrom, as may be desired.

Our attachment or appendage is so compact and light that it may be readily handled or held in the lap when desired, and it is also so narrow that when applied to a wind musical instrument, as here shown, it enables the manual key-board of the instrument to be readily reached for playing at the same time that the attachment or appendage is being operated.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. An attachment or appendage for a wind musical instrument comprising sound-producing devices, a rest for a traveling music card or tablet, a wind chest or channel, and a case adapted to be arranged and supported in front of the manual key-board of said instrument, in combination with means for connecting the wind chest or channel of said attachment or appendage with the wind-inducing devices of said instrument, substantially as and for the purpose specified.

2. An attachment or appendage for a wind musical instrument comprising sound-producing devices, a rest for a traveling music card or tablet, a wind chest or channel, and a case adapted to be attached to and supported by a wind musical instrument, in combination with

means for connecting the wind chest or channel of said attachment or appendage with the wind-inducing devices of said instrument, substantially as and for the purpose specified.

3. An attachment or appendage for a wind musical instrument comprising sound-producing devices, a rest for a traveling music-sheet, a roller for said sheet, a wind chest or channel, and a case adapted to be attached to and supported by a wind musical instrument, in combination with means for connecting the wind chest or channel of the attachment or appendage with the wind-inducing devices of the instrument and devices for operating the roller of the attachment or appendage from the treadle of the instrument, substantially as and for the purpose specified.

4. The combination, with a wind musical instrument comprising the wind-chest B and treadle D, of the attachment or appendage secured thereto, and comprising sound-producing devices, a rest, a traveling music-sheet, a take-up roller therefor, and a wind-chest, a pipe or tube connecting the two wind-chests, and devices for imparting rotary motion from the said treadle D to said take-up roller, leaving the keys of the wind musical instrument capable of operation manually, substantially as and for the purpose specified.

5. The combination, with sound-producing devices and music and take-up rollers for a traveling music-sheet for controlling the operation of said sound-producing devices, each of said rollers having a wheel, of a driving-shaft and a driving-wheel and a swinging bearing for said shaft mounted upon a stationary pivot and adapted to be adjusted to cause the driving-wheel to engage with the wheel of either roller to impart motion thereto, substantially as specified.

6. The combination, with sound-producing devices and music and take-up rollers for a traveling music-sheet for controlling the operation of said sound-producing devices, each of said rollers having a wheel, of a driving-shaft and a driving-wheel, a swinging bearing for said shaft mounted upon a stationary pivot and adapted to be adjusted to cause said driving-wheel to engage with the wheel of either roller to impart motion thereto, and a spring for holding said bearing in either position to which it may be adjusted, substantially as specified.

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