(No Model.)

L. BERNHARDT.

ACCORDION.

No. 286,679. Patented Oct. 16, 1883.

Fig. 1.

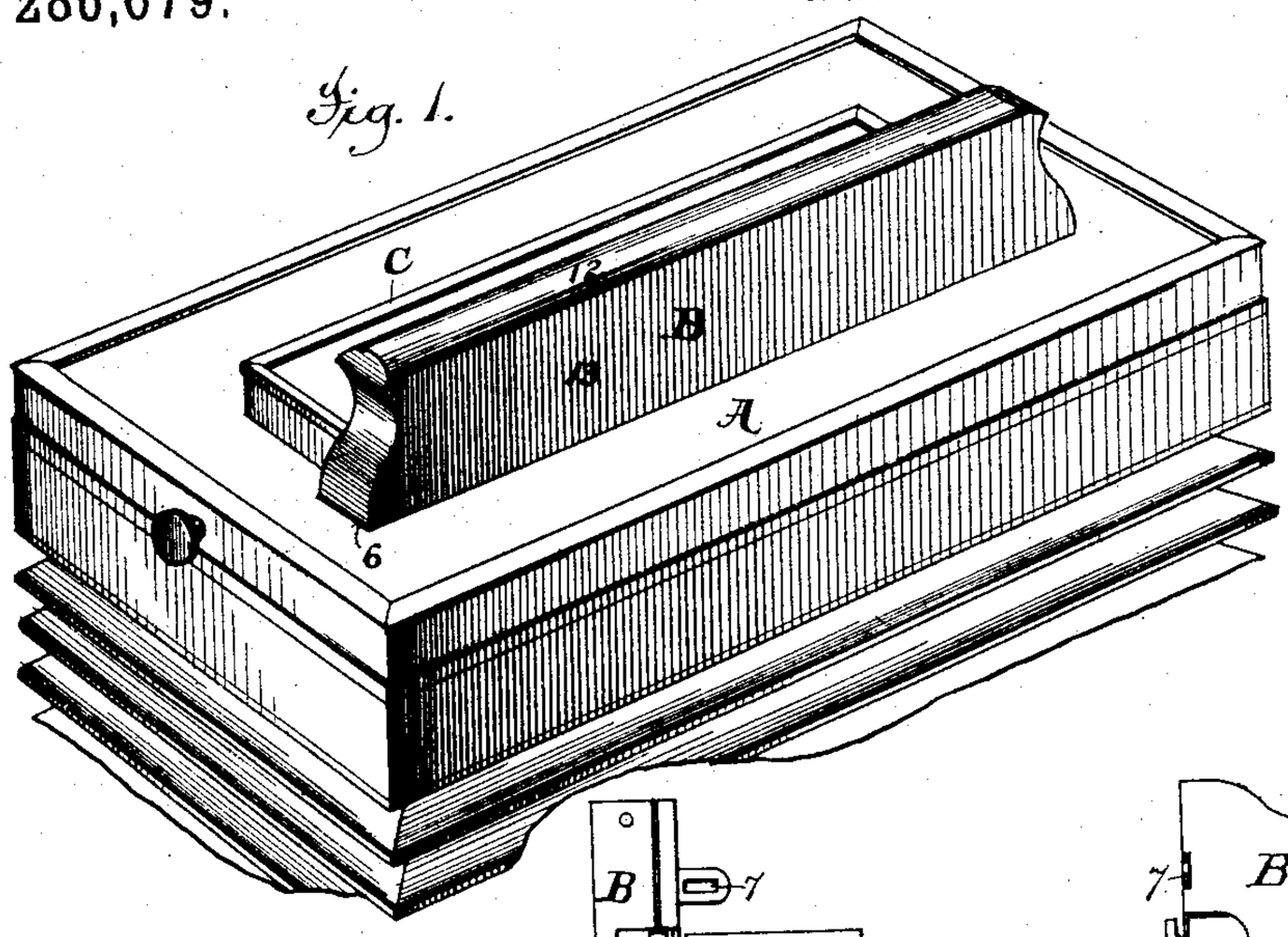


Fig. 2.

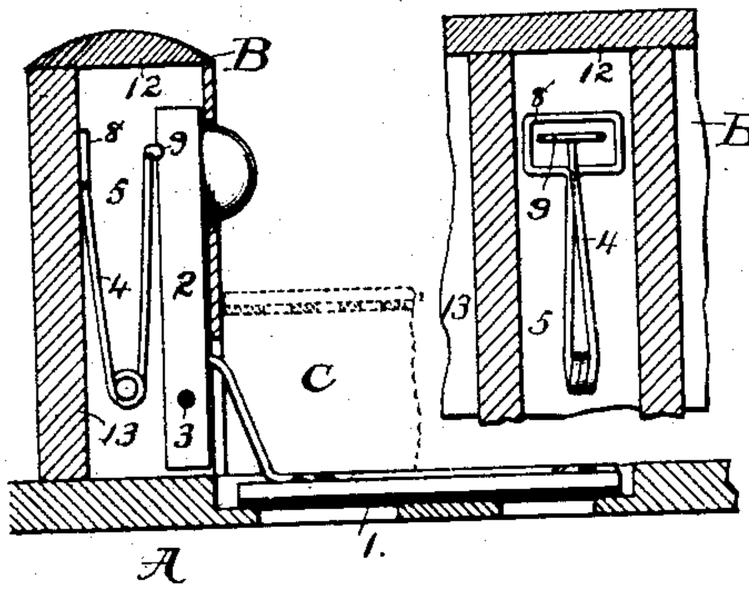


Fig. 5.

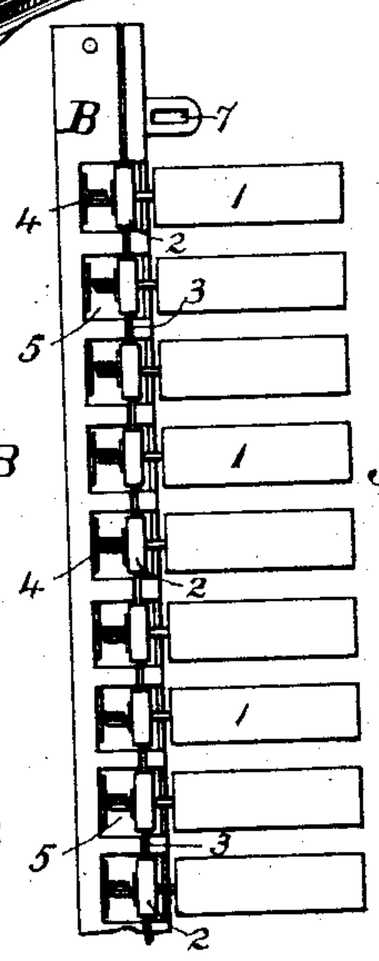


Fig. 4.

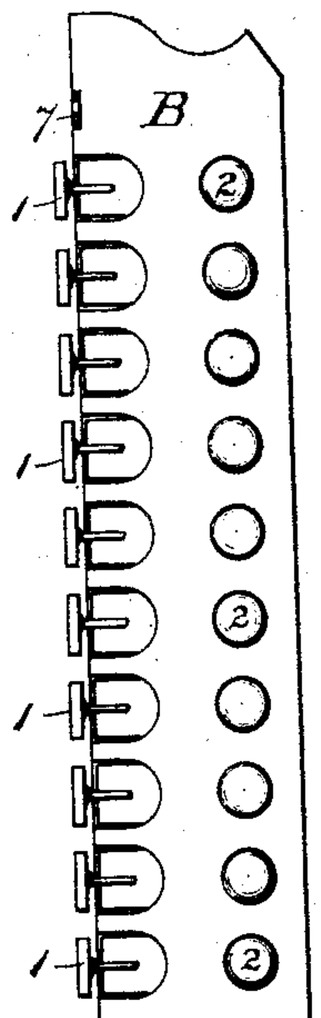
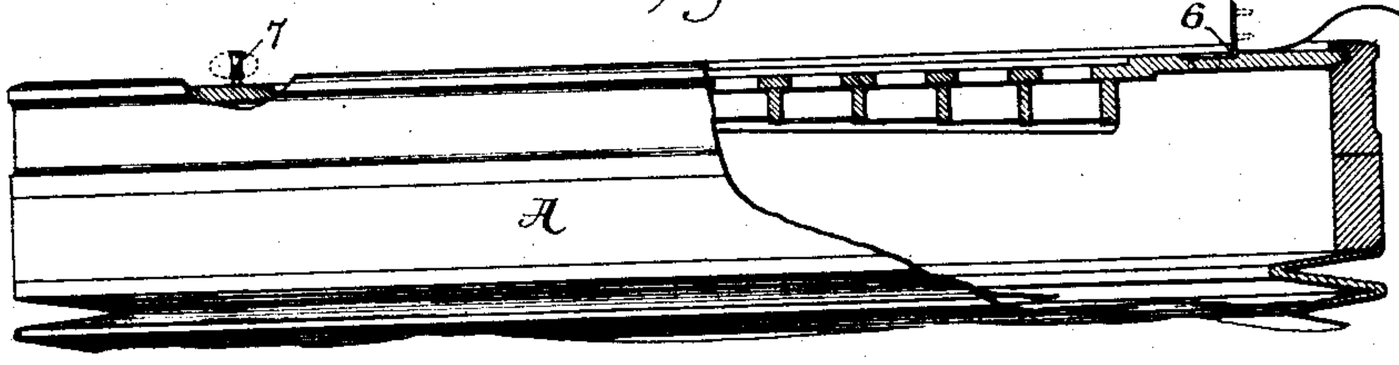


Fig. 3.



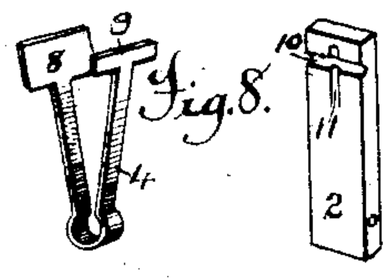


Fig. 8.

Fig. 7.

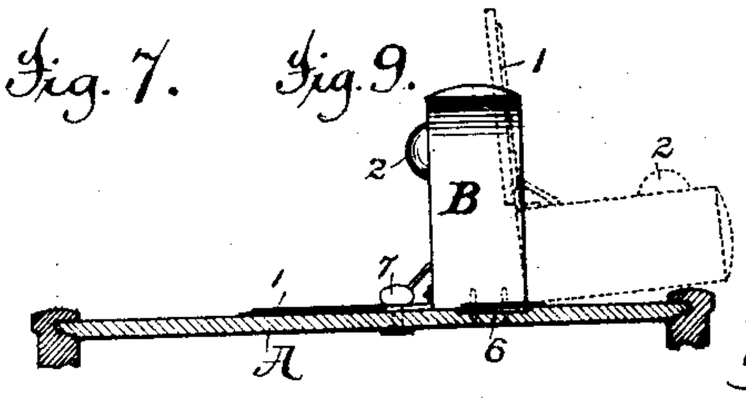


Fig. 9.

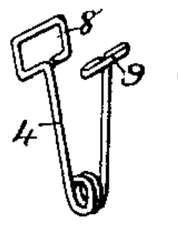


Fig. 6.

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UNITED STATES PATENT OFFICE.

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ACCORDION.

SPECIFICATION forming part of Letters Patent No. 286,679, dated October 16, 1883.

Application filed January 6, 1883. (No model.) Patented in Germany January 21, 1883.

To all whom it may concern:

Be it known that I, LOUIS BERNHARDT, a citizen of the United States, residing in the city of Bergen, county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Accordions, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

It is well known to those familiar with the use of accordions and similar instruments that the keys, key-springs, and valves of these instruments are liable to become deranged when in use, so that it is frequently necessary to gain access to these parts for readjustment or repair. In these instruments as ordinarily constructed the key-board is attached to the casing of the reed-chest, by screws or other similar means working from the inside of the latter, so that in order to gain access to any part of the action of the key-board to repair or readjust the same it is necessary to remove the top of the instrument, containing the reed-chest, and then detach the key-board therefrom. This operation not only occasions considerable trouble and delay, but, if frequently repeated, is very liable to injure or displace the packing used to form a tight joint between the bellows and the top casing of the instrument, so that a leak will be occasioned and the operation of the instrument impaired or destroyed.

It is the object of the present invention, among other things, to provided a means by which access can be more readily obtained to the action contained in the key-boards when repairs are required, and to do this in such a manner that all danger of injuring the instrument will be avoided.

To this end one feature of the invention consists in so constructing and arranging the key-board that the keys, key-springs, and valves carried thereby can be easily exposed and ready access given thereto without removing the top casing of the instrument, as was necessary in the former structures.

Another defect in instruments of this class as heretofore constructed has been in the construction of the key-springs, which have usually been provided with simple spike-shanks, one of which was forced into the back of the recess in the key-board and the other into the key. In case it became necessary to remove or replace a spring thus constructed, it was necessary to remove the key from its seat in the key-board, and as all of the keys are pivoted upon a single rod or wire, the withdrawal of this rod to release any particular key was liable to release several keys, or perhaps the entire range, thus causing much delay and additional labor in replacing and readjusting the keys and springs. The springs thus secured were also liable to swing from side to side, so as to come into contact with the walls of their recesses, thereby occasioning an imperfect and disagreeable action of the keys. Certain of these defects are overcome by the construction shown in United States Letters Patent No. 201,974; but said construction possesses other disadvantages.

The present invention also aims to cure the before-mentioned defects; and to that end another feature of the invention consists in a spring of peculiar construction, whereby this is accomplished.

The advantages of the features hereinbefore specified are not, as will readily be understood by those familiar with the art, confined to the repairing of instruments, but extend to the manufacture also, as by these means the assembling of the parts is greatly facilitated and the springs are more readily and accurately adjusted to the proper pressure.

In the accompanying drawings, Figure 1 is a perspective view, showing the top of an instrument provided with a key-board embodying the present invention, said top being attached to the bellows by screws in the ordinary manner. Fig. 2 is a cross-section of the same upon an enlarged scale. Fig. 3 is a side elevation, partly in section, of the same, the key-board being swung away so as to expose the keys, key-springs, and valves. Fig. 4 is a bottom plan view of a portion of the key-board, keys, key-springs and valves. Fig. 5 is a sectional detail of a portion of the key-board, taken at right angles to Fig. 2. Fig. 6 is a perspective view of one of the key-springs. Fig. 7 is a like view of one of the keys. Fig. 8 is a like view of a key-spring of a modified construction, and Fig. 9 is an end elevation of the key-board, showing a different manner of securing the same to the casing of the reed-chest.

The reed-chest A is of the ordinary construction, and is provided with the usual key-

board, B, and casing C, for covering the valves, the top or cover of the reed-chest having the usual openings, upon which the valves close. The valves 1 and keys 2 are also of the ordinary construction, the latter being pivoted in the usual manner upon a single rod 3, which passes through all of the keys and has bearings in the key-board. The springs 4, which serve to normally hold the valves in a closed position, are also, as is usual, placed in recesses 5 in the key-board, behind the keys. From this arrangement it will readily be seen that, in order to repair or readjust the keys, valves, or springs, it is necessary to expose the under side of the key-board and to obtain access to the recesses 5, and that when the key-board is attached in the ordinary manner to or made a part of the reed-chest this can only be done by removing the top of the instrument, and then detaching the key-board from the casing of the reed-chest. To avoid this delay and trouble and the incident danger to the instrument, the key-board is made removable independently of the reed-chest, it being for this purpose provided with a hinge, 6, and latch 7, by which it can be secured in the position shown in Fig. 1 when the instrument is to be used, or swung to the position shown in Fig. 3 when it is desired to gain access to its action. By this arrangement it will be seen that access can be instantly had to any one of the keys, valves, or springs, and that any one of these parts can be repaired without disturbing or disarranging any of the others and without the necessity of removing the top of the instrument.

The hinge 6 and latch 7 may be arranged at the ends of the key-board, as shown in Figs. 1 and 3; or they may be arranged, as shown in Fig. 9, so that the key-board shall swing backward; or, instead of a hinge and latch, two or more latches, catches, or other fastening devices may be used, so that the key-board can be entirely detached from the reed-chest when it is desired to gain access to its action.

A part of the advantages just enumerated may be attained by making the top 12 of the key-board in a separate piece, as shown in Fig. 2, and so securing it to the body of the board in any suitable manner that it can be readily removed, or by making the back 13 of the key-board separate and removable from the body. By either of these constructions access can be readily obtained at any time to the recesses containing the springs, so that the latter can be removed or adjusted without removing the key-board; but these constructions will not, of course, facilitate access to the valves.

As before stated, when the ends of the springs 4 are bent so as to form spikes which enter the keys and the walls of their recesses, the springs are liable to turn so as to come into contact with the walls of the recesses, thereby causing imperfect action of the keys. To prevent this turning of the springs, and also to obviate the necessity of removing the keys from their pivots in order to remove and replace the springs, I bend one or both ends of the springs, so as to form quadrilateral loops 8, which fit squarely into the recesses 5, as shown in Fig. 5, in such manner as to always keep the springs in substantially a central position. One end of the springs, instead of being bent to a quadrilateral form, may be bent so as to form a projection, 9, as shown in Fig. 6, which enters a recess, 10, in the back of the key, so as to prevent the spring from moving toward the bottom of the recess 5. The keys may also be provided with central grooves, 11, in which the arms of the springs bearing against them will rest and by which these arms will be prevented from moving laterally.

The grooves 10 may be omitted if the loops 8 are made to fit tightly into the recesses 5, and both the grooves 10 and 11 may be omitted if the springs are provided with quadrilateral loops at both ends.

The springs 4, instead of being made of wire, as in Fig. 6, may be made of spring sheet-metal, as in Fig. 8. The loops 8 need not be complete quadrilaterals, as shown, it only being essential that two bearing sides be provided to rest against the sides of the recesses.

With this construction it will readily be seen that by pressing the arms of any one of the springs together with a pair of forceps it can be easily removed from and replaced in its recess.

What I claim is—

1. The combination, with the reed-chest A, the top of which is provided with the valve-openings, of the key-board B, carrying the valves, keys, and key-springs, and means for detachably connecting said key-board to the top of said reed-chest, substantially as described.

2. The combination, with the reed-chest A, the top of which is provided with the valve-openings, of the hinged key-board B, carrying the valves, keys, and key-springs, substantially as described.

3. The combination, with the key-board having the recesses 5, of the keys 2 and the springs 4, having broad square ends, as 8, which extend beyond the bodies of the springs, and are of sufficient width to engage with the walls of the recesses and prevent the bodies of the springs from turning so as to come into contact with said walls, substantially as described.

4. The combination, with the key-board having recesses, as 5, of the keys having recesses, as 10, and the springs having broad ends 8 and projections 9, substantially as described.

5. The bent metal key-spring 4, having one or both of its ends provided with rectangular portions, as 8, extending beyond the body of the spring, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LOUIS BERNHARDT.

Witnesses:
J. A. HOVEY,
T. H. PALMER.