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A.D. 1881, 17th August. N° 3568.  
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## Concertinas and Accordions.

LETTERS PATENT to Boswell Berry, of 18, Hawthorn Road, Gosforth, Newcastle-on-Tyne, Teacher of English, for an Invention of "IMPROVEMENTS IN CONCERTINAS AND ACCORDIONS."

PROVISIONAL SPECIFICATION left by the said Boswell Berry at the Office of the Commissioners of Patents on the 17th August 1881.

BOSWELL BERRY, of 18, Hawthorn Road, Gosforth, Newcastle on Tyne, "IMPROVEMENTS IN CONCERTINAS AND ACCORDIONS."

- 5 The principle on which my Invention proceeds is this, that any musical scale is so related to another whose key-note is three full tones distant from the key-note of the former, that the first six natural notes of the former scale are identical with the five accidentals of the latter, together with the seventh natural note of the former scale. I propose to apply this to concertinas and accordions in two
- 10 ways:—
1. By a change of tuning I give the improved instrument command of two perfect chromatic scales, such as C and G $\flat$ , instead of the two imperfect scales C and G now in use. For this purpose I propose to tune one row of reeds thus:—C D, E F, G A, C D, and so on, and the other row C $\sharp$  D $\sharp$ , G $\flat$  A $\flat$ , B $\flat$  B,
- 15 C $\sharp$  D $\sharp$ , and so on, to any range of notes.
2. By the use of a stop moved by a handle on the key-board or otherwise into six positions I propose to give the instrument command of all the chromatic scales, twelve major and twelve minor, so that it will be possible with the improved instrument to play the melody of any tune in the key for which it is written, and
- 20 that in all the scales the notes, whether natural or accidentals, will hold the same relative position to the key-notes. For this purpose the reeds are enclosed in chambers of a certain form. The stop consists of a series of compartments so arranged as to bring each key into connection for "push" and "draw" movement with the reeds that sound the notes proper to that key in the scales for which the
- 25 stop is at the time set.

*Berry's Improvements in Concertinas and Accordions.*

SPECIFICATION in pursuance of the conditions of the Letters Patent filed by the said Boswell Berry in the Great Seal Patent Office on the 13th February 1882.

BOSWELL BERRY, of 18, Hawthorn Road, Gosforth, Newcastle-on-Tyne, Teacher of English. "IMPROVEMENTS IN CONCERTINAS AND ACCORDIONS." 5

The principle on which my Invention proceeds is this, that any musical scale is so related to another whose key-note is three full tones distant from the key-note of the former that the first six natural notes of the former scale are identical with the five accidentals of the latter, together with the seventh natural note of the former scale. I propose to apply this to concertinas and accordions in two 10 ways:—

1. By a change of tuning I give the improved instrument command of two perfect chromatic scales, such as C and G $\flat$ , instead of the two imperfect scales C and G now in use. For this purpose I tune the reeds under one row of keys thus:—C D, E F, G A, C D, and so on, and the reeds under the other row 15 C $\sharp$  D $\sharp$ , G $\flat$  A $\flat$ , B $\flat$  B, C $\sharp$  D $\sharp$ , and so on, to any range of notes. Each pair of reeds is as usual in connection with one button or key, and the first of each pair sounds to the "push," the second to the "draw" movement. The buttons or keys upon the finger-board follow in regular series alternately for the two scales from the lowest on the left-hand to the highest on the right-hand. 20

2. By the use of a stop capable of being placed in six different positions I give the instrument command of all the chromatic scales, so that the melody of any tune can be played in the key in which it is written, and that in all the scales the 1st, 3rd, 5th (as in the common instruments), together with the sharp 1st, 4th, and 6th, shall be sounded by the "push," and the 2nd, 4th, 6th, and 7th, with the 25 sharp 2nd and 5th, shall be sounded by the "draw" movement.

Figs. I., II., show in their relative positions the essential parts of the improved instrument as constructed with twelve keys to give the two treble octaves. The left-hand fingerboard and the lower octave is shown. The right-hand and higher octave differs only in the pitch of the reeds and in having an air-valve as usual in 30 some convenient position. The unbroken lines and unaccented letters show the parts when the stop is set to some particular scale, the lines of dashes, and the accented letters the same when the stop is free to move into a new position. A is the key-board pierced for the keys, as at *a, a*, &c.; B is the board on which the valves from the keys rest; C is the reed-chest rigidly fixed at a certain distance 35 under B; D is the stop fitting airtight against C and against E, a projection on B, and moved from the outside by *b* and *c*. The cross marks the centre of B, as also in Fig. III.

Fig. III. shows the reed chest (C, Figs. I., II.) in its relation to E, the stop being removed; *a, b, c, d*, are sections through E, as marked. 40

Fig. IV. is a front elevation of the reed-chest; *a, a*, is the reed-plate, on which fifteen reeds of the pitch marked are arranged at equal distances on the side towards *c, c*, with valves as usual. Along *a, a, b, b, c, c*, and also along *b a, a c*, &c., a stuffing of kidskin or other suitable material is placed; *l, l*, are fixed to C (see 45 also Fig. II.) to keep it at a proper distance from B.

Fig. V. shows the stop (D, Figs. I., II.); 1 is the plan of the top with sections of the coverings over the openings in the reed-chest; 2 is the front elevation of the stop with the coverings removed from the part to the left; 3 is the internal section through *h, k, k, l*.

The rod *b* (Figs. I., II.), moving freely along the wire *d* fixed to D, draws D 50 back free from contact with C and E. The stop can then by means of *c* moving freely along *e* be put into any one of the six positions marked on *c*. When the

*Berry's Improvements in Concertinas and Accordions.*

pin *n*, which passes through a projection in *A*, can pass through a hole in *c*, the stop is in position to give the scales marked on the index *F* as corresponding to that number. The rod *b* can then be pushed back and fixed by *m*, when *D* will press airtight against *C* and *E*.

5 Another method of moving the stop with greater security against leakage is shewn in Figs. VI., VII. The spindle *a* carries the pinion *b* rigidly fixed to it, and the bent rod *c* so fixed to *a* that while *a* can turn freely in *c* it must carry *c* with it when moved from or towards *B*. On *D* a rack *d* is fixed, through *g*, a slit in which *c* passes. A pin *h* passing through a hole in *c* allows *c* to move from or  
10 towards *B*, but prevents motion sideways. It also locks *b* when *a* is drawn up by passing through one of the six holes in *b*. The pin *e* fixed in *D* and passing along the wire *f*, with the pins *k* and *l*, keep *D* in proper position with respect to *C*; Fig. VI., 1, shows the parts when the instrument is set to a certain scale; *a* is drawn up and the angle of *c* presses *D* against *C*; *b* is locked by *h*; Fig. VI., 2, shows  
15 the parts when the stop is moving into a new position; *a* is pushed down and the angle of *c* has drawn back *D* from *C* and *E*. The pinion *b*, clear of *h*, works into the rack *d* and moves *D* in either direction. In Fig. VII. the unbroken lines show the position of the parts, corresponding to Fig. VI., 1; the broken lines, the position corresponding to Fig. VI., 2.

20 For an instrument with more than twelve keys there must be a corresponding addition to the number of the reeds and to the length of the stop, provision being made to allow the stop to pass to its full distance under *B*. Thus for 16 keys (8 on each key-board) 19 reeds would be needed in each reed-chest and the stop would consist of three times *d f*, (Fig. V.), with *f g*, added.

25 For an instrument of the accordion shape the reeds would be three more than double the number of keys, with stop lengthened to correspond. Thus for 21 keys giving from about *E* (leger line below bass) to about *A* (leger line above treble) there would be 45 reeds from the *D* below the bass to the *Bb* above the treble and the stop would consist of seven times *e g*, with *e f*, added.

30 The sizes of the parts may vary in different kinds of instrument, and so may the method of moving and fixing the stop. For the usual style of instrument the size shown in the Drawings would be suitable. The distance between the reeds, on which the size of the other parts mostly depends, must be sufficient to let the valves over the reeds move freely in the reed-chambers.

35 I claim as new,—

1. The arrangement for fingering, by which the first six natural notes of any scale are sounded by one row of keys, and the five accidentals with the seventh natural note are sounded by the other row of keys.

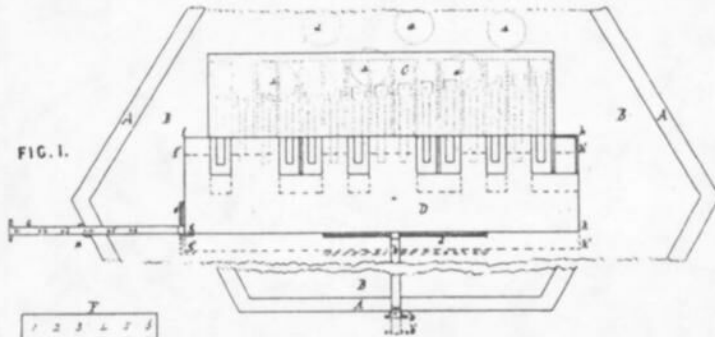
2. The parts and arrangement of the stop and the form of the reed-chambers,  
40 substantially as described above.

3. The methods adopted for moving and fixing the stop, substantially as described above.

In witness whereof, I, the said Boswell Berry, have hereunto set my hand and seal, this Seventh day of February, in the year of our Lord 1882.

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BOSWELL BERRY. (L.S.)



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