

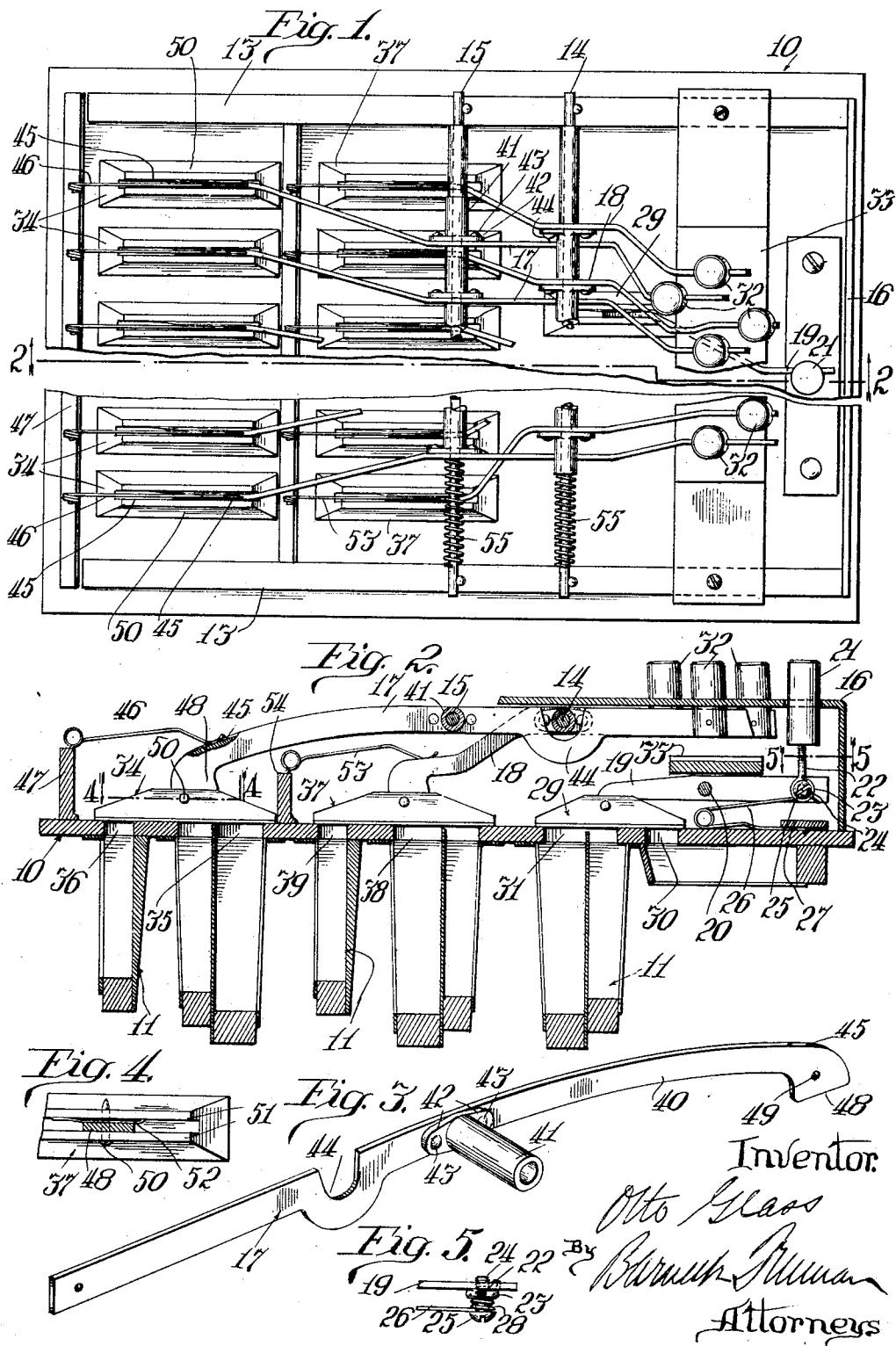
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O. GLASS

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CONCERTINA ACTION

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UNITED STATES PATENT OFFICE

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CONCERTINA ACTION

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My invention relates to musical instruments of the concertina type and its object is to provide in an action for concertinas or like instruments certain novel and improved arrangements, devices and constructions, whereby the mechanism will be simplified and made more compact and the parts more durable; friction and wear reduced and looseness prevented; an adequate spread of the valves permitted without interfering with a close arrangement of the key finger buttons; and the action of the keys balanced so that the valves may be lifted to give uniform openings to the reed boxes by finger pressures which are approximately uniform for all of the keys.

A further and specific object is to provide an improved key structure comprising in the first place a bar formed preferably of cold rolled sheet aluminum, so as to be strong and of adequate rigidity when assembled in the action but which may be readily bent to make the necessary adjustment of the bar to the positions of the finger button and valve, as required for any particular bar; and comprising also a separately formed bearing and spacing hub attachable to the bar at whatever point may be necessary and consisting preferably of a casting of an aluminum alloy of such character as to diminish friction and resist wear.

Other objects of the invention will be apparent from the following description of the preferred embodiment of the invention illustrated in the accompanying drawing.

In this drawing:

Fig. 1 is a fragmentary plan view of the concertina action with the casing or cover removed.

Fig. 2 is a sectional view on line 2—2 of Fig. 1.

Fig. 3 is a view in perspective of one of the key bars before being bent as some of them preferably are.

Fig. 4 is a fragmentary sectional plan on the line 4—4 of Fig. 2, and

Fig. 5 is a similar view on line 5—5 of Fig. 2.

Referring to the drawing, 10 designates the key board of the instrument and 11, 11... the

reed boxes. At opposite sides of the key board are supports 13—13 for pivot rods 14 and 15. The cover plate is indicated in Fig. 2 at 16.

There are three sets of keys of different lengths; the long keys 17 are pivoted on the rod 15; a set of shorter keys 18 on the rod 14; and a third set of keys 19, shorter in length than the keys 18 are on a rod 20 extending between the supports 13 below the rods 14 and 15.

The keys 19 are provided, in each case, with a finger piece 21 secured to an eyelet screw 22, the eyelet 23 of which receives a riveted stud 24 having a head 25. A spring 26 of the grasshopper type is secured to the key board underneath the clamping strip 27, with its other end wrapped in a coil, as indicated at 28 (Fig. 5) around the stud 24 between the eyelet 23 and the head 25 of the stud. The keys 19 are provided with valves 29 for controlling the openings 30, 31 to the set of reed boxes nearest the bank of finger pieces on the several keys of the instrument.

The keys 17 and 18 are provided with finger pieces 32 preferably rigidly attached to the keys. 33 is a stop bar for these keys provided with a clamping strip. The longer keys 17 are provided with valves 34 which control the openings 35, 36 to the set of reed boxes remote from the finger pieces. The keys 18 are provided with similar valves 37 for controlling the openings 38, 39 to the intermediate set of reed boxes.

One of the key bars, specifically one of the longer key bars 17, is shown in detail in Fig. 3. It consists of a sheet metal stamping 40 preferably of cold rolled aluminum, to which is secured a bearing and spacing hub 41, which is a cast structure, preferably, composed of aluminum copper alloy containing about 12% of copper. The hub is formed with ears 42 for rivets 43. A key bar made of cold rolled aluminum is light, strong, quite rigid when assembled in the action, but sufficiently pliable so that it can be given a permanent set by bending to the configuration required by the relative positions which its valve and finger piece must occupy in the assembly. It is desirable to have the finger pieces as close together as possible; and on

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the other hand, the valves must be spread apart to a considerable extent, in order to give ample space for the reed boxes. The key bars are bent to different configurations as indicated in Fig. 1. It is desirable for several reasons to have the bearing and spacing hub made as a separate piece and of the cast metal mentioned. When composed of aluminum copper alloy the hub will have the necessary strength besides which wear and friction will be reduced to a minimum.

By making the hub separate from the bar it may be secured to the bar at any desired point, depending upon the position of the bridge rod on which it is pivoted and the extent to which the bar may be bent. The pivot rods 14 and 15 are preferably arranged at the same distance from the key board 10. The rod 14 for the shorter keys 18 is arranged closer to the bank of finger pieces 32 than the rod 15 which carries the longer keys 17, and the bar 40 of each of the longer keys 17 is formed with an offset 44 which loops around the rod 14 and the key bar hubs thereof with a sufficient clearance to permit the necessary freedom of movement of the longer keys. This arrangement gives compactness to the action, particularly by diminishing the overall distance between the keys and the key board 10, and equalizes the leverages of the longer and shorter keys at least with a fair degree of approximation.

The key bars 40 of the long keys 17 are grooved at 45 for the ends of springs 46 mounted on a support 47 near the edge of the key board. The outer end of each of the key bars is formed with a head or enlargement 48 perforated at 49 for a pin 50 (Fig. 4) which extends through ears 51, 51 on the valves 34 and through a thin slightly bent metal spring piece 52 which intervenes between the head 49 of bar 40 and one of the ears. The construction may be the same for the valves 29 and 37. The keys 18 are also grooved at their ends in the same way as the keys 17 for springs 53, which are mounted on a supporting strip 54.

Arranged on the pivot rods 14 and 15 are coiled springs 55, 55, which bear against one of the side strips 13 and against the keys adjacent thereto for the purpose of keeping the keys in contact with each other.

I have described the improvements constituting my invention in an embodiment of the invention which I regard as most desirable. It will be understood, however, that certain modifications in structure and arrangement may be made without departure from the invention. My purpose is to patent all such modifications within the scope of the appended claims.

I claim:

1. In an action for musical instruments of the concertina type, the combination with a pivot rod, of a key comprising a bar com-

posed of a cold rolled aluminum sheet stamping and a bearing and spacing hub consisting of an aluminum alloy casting secured to the bar.

2. In an action for musical instruments of the concertina type, the combination with a pivot rod, of a key thereon comprising a sheet metal bar provided with a bearing and spacing hub and formed with an offset to extend around an adjacent pivot rod.

3. In an action for musical instruments of the concertina type, the combination with a pivot rod, of a plurality of key structures thereon comprising in each case a bar and a hub on one side face only of the bar which extends to and bears against the opposite side face of the adjacent bar on such pivot rod.

4. In an action for musical instruments of the concertina type, the combination with a pivot rod, of a plurality of key structures thereon comprising in each case a sheet metal bar and a cast metal hub on one side face only of the bar which extends to and bears against the opposite side face of the adjacent bar on such pivot rod.

5. In an action for musical instruments of the concertina type, the combination with a pivot rod, of a key thereon comprising a sheet metal bar and a cast bearing and spacing hub secured to the bar, a valve provided with spaced ears between which the end of the bar extends, a piece of thin resilient metal between said bar and one of said ears, and a pivot pin extending through the ears, metal piece and bar.

6. In an action for musical instruments of the concertina type, the combination with a pivot rod, of a plurality of key structures thereon comprising in each case a bar and a hub on one side face only of the bar which extends to and bears against the opposite side face of the adjacent bar on such pivot rod, and a coiled spring on the rod to keep said key structures in contact with each other.

7. In an action for musical instruments of the concertina type, the combination of parallel rods, a set of key structures on each of said rods comprising sheet metal key bars and bearing in spacing hubs on said bars, the bars mounted on one of said rods being formed with offsets to extend around the other rod and the hubs of the key bars thereon.

8. In an action for musical instruments of the concertina type, the combination of parallel pivot rods, a set of key structures on each of said rods comprising in each case a key bar and a hub on one side face only of the key bar extending to and bearing against the opposite side face of the adjacent key bar, the key bars of one set being formed with offsets to extend around the other rod and the key bar hubs thereon.

9. In an action for musical instruments of the concertina type, the combination of a

key board formed with two parallel rows of reed box openings, a pair of parallel pivot rods supported at substantially the same distance from the key board, sets of long and short keys on said rods, respectively, provided at the ends at one side of the action with finger pieces and at the other ends with valves to close said reed box openings, and a hub secured to each bar on one side thereof for spacing the bar from the next adjacent bar, the set of shorter keys being mounted on the rod nearer the finger pieces and the longer keys being formed with offsets to extend around the other rod and the spacing hubs thereon.

10 10. In an action for musical instruments of the concertina type, the combination of a key board formed with two parallel rows of reed box openings, a pair of parallel pivot rods supported at substantially the same distance from the key board, two sets of long and short keys on said rods comprising sheet metal bars provided with bearing and spacing hubs and provided at the ends at one 20 side of the action with finger pieces and at the other end with valves to close said reed box openings, the set of short keys being mounted on the rod nearer the finger pieces and the longer keys being formed with offsets to extend around the other rod and the spacing hubs thereon.

15 11. In an action for musical instruments of the concertina type, the combination of a key board formed with two parallel rows of reed box openings, a pair of parallel pivot rods supported at substantially the same distance from the key board, sets of long and shorter keys on said rods respectively comprising, in each case, a rolled aluminum sheet 25 stamping and an aluminum alloy casting secured to the stamping and forming a bearing and spacing hub, said keys being provided at the ends at one side of the action with finger pieces and at the other ends with valves to close said reed box openings, the set of shorter keys being mounted on the rod near the finger pieces and the long keys being formed with offsets to extend around the other rod and spacing hubs thereon.

30 12. In an action for musical instruments of the concertina type, the combination of a key board formed with two parallel rows of reed box openings, a pair of parallel pivot rods supported at substantially the same distance 35 from the key board, two sets of long and shorter keys on said rods comprising sheet metal bars provided with bearing and spacing hubs and provided at the ends at one side of the action with finger pieces and at the other end with valves to close said reed box openings, the set of shorter keys being mounted on the rod nearer the finger pieces and the longer keys being formed with offsets to extend around the other rod and the spacing hubs thereon, and coiled springs on

the rods to keep the keys in contact with each other.

35 13. In an action for musical instruments of the concertina type, the combination of a pair of parallel pivot rods, sets of key bars pivoted on said rods, the keys mounted on one of the rods being formed with offsets to extend around the other rod. 70

14. In an action for musical instruments of the concertina type, the combination of a key board having reed box openings, a pair of parallel pivot rods arranged at substantially the same distance from the key board, sets of long and short key bars on said pivot rods respectively, the longer key bars being pivoted to the rod more remote from the reed box openings and being formed with offsets to extend around the other pivot rod. 75 80

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