

May 9, 1933.

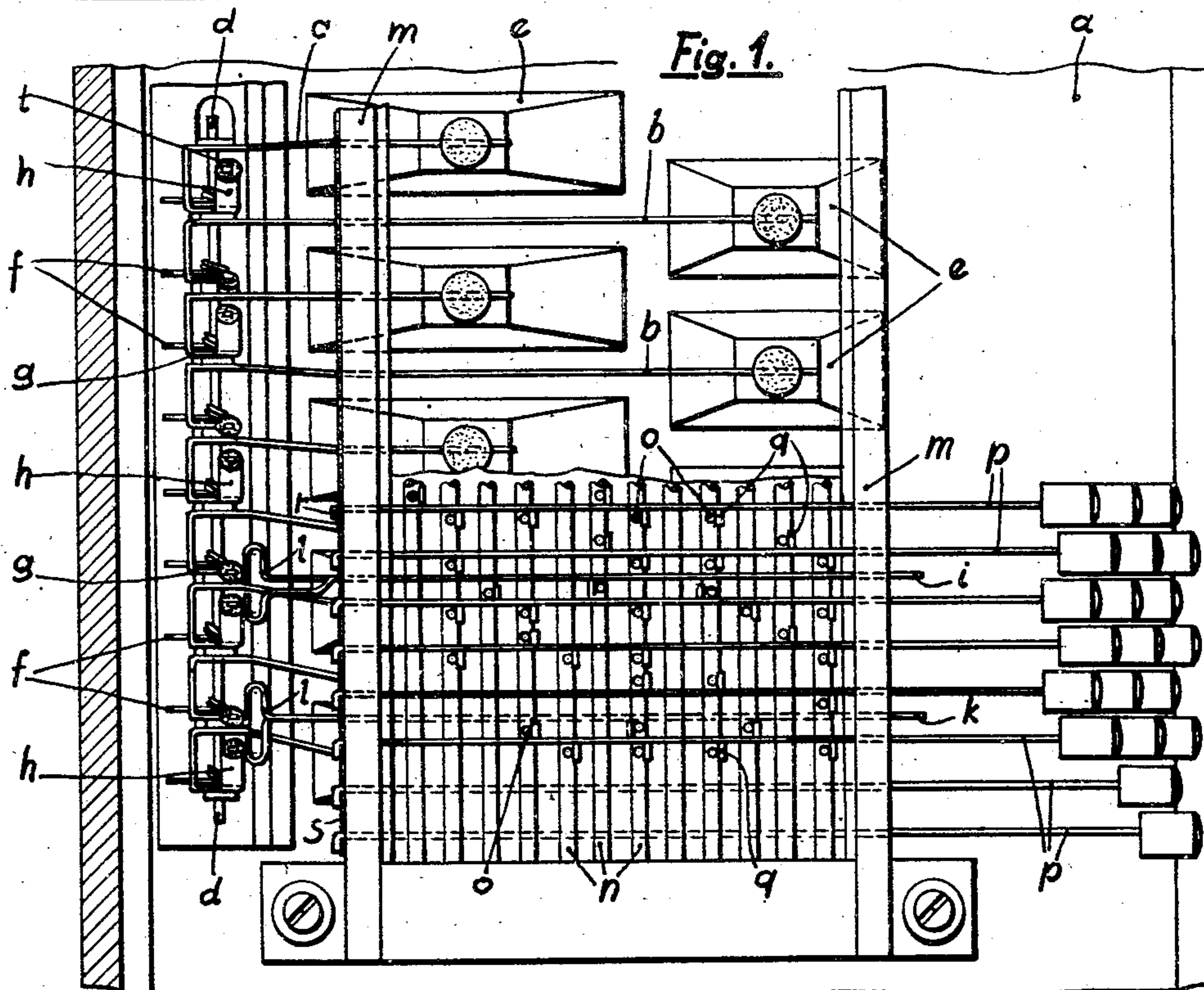
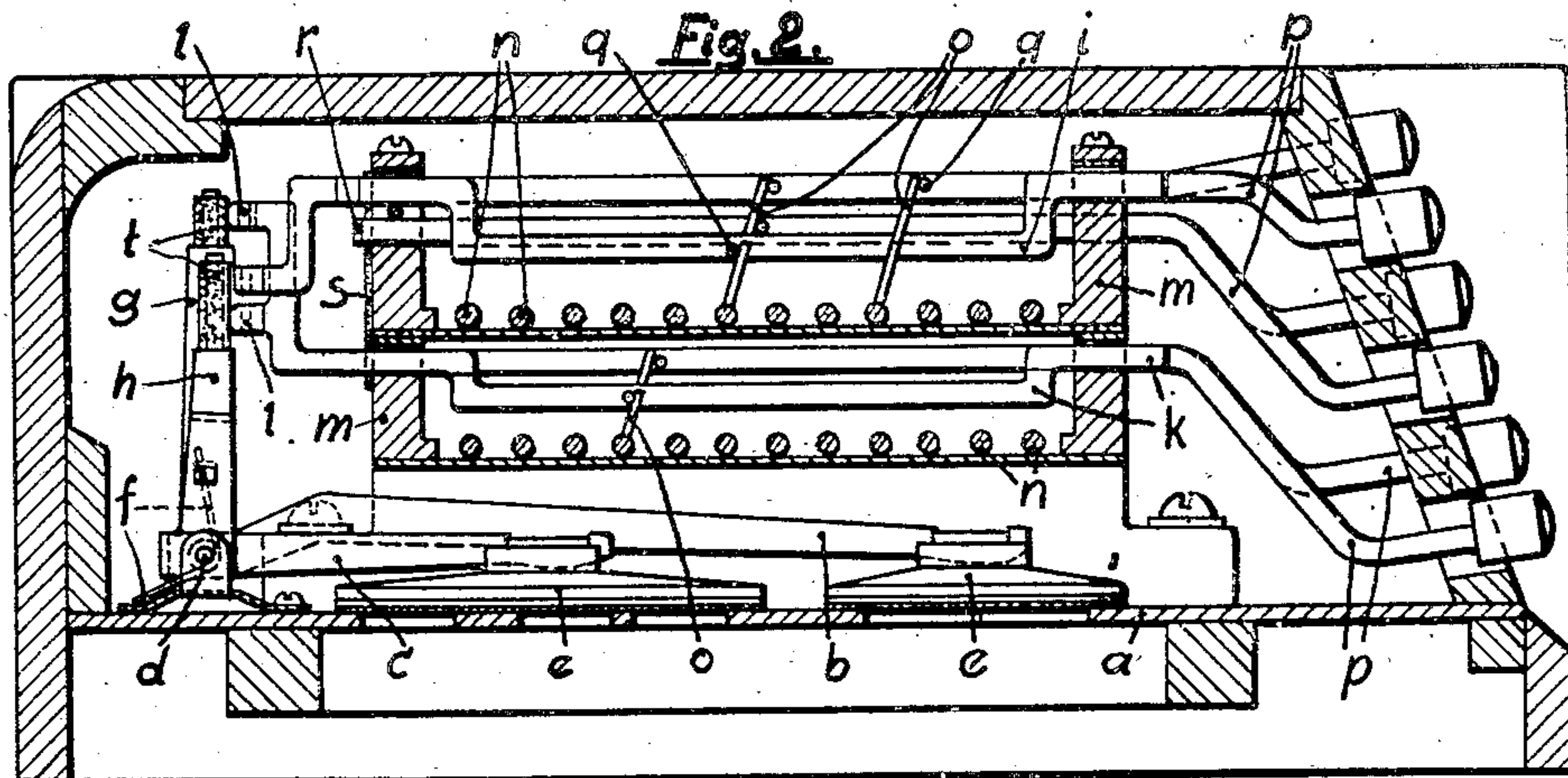
E. HOHNER

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BASS MECHANISM FOR ACCORDIONS

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2 Sheets-Sheet 1



Inventor  
Ernst Hohner  
by Max D. Ordmann  
Attorney

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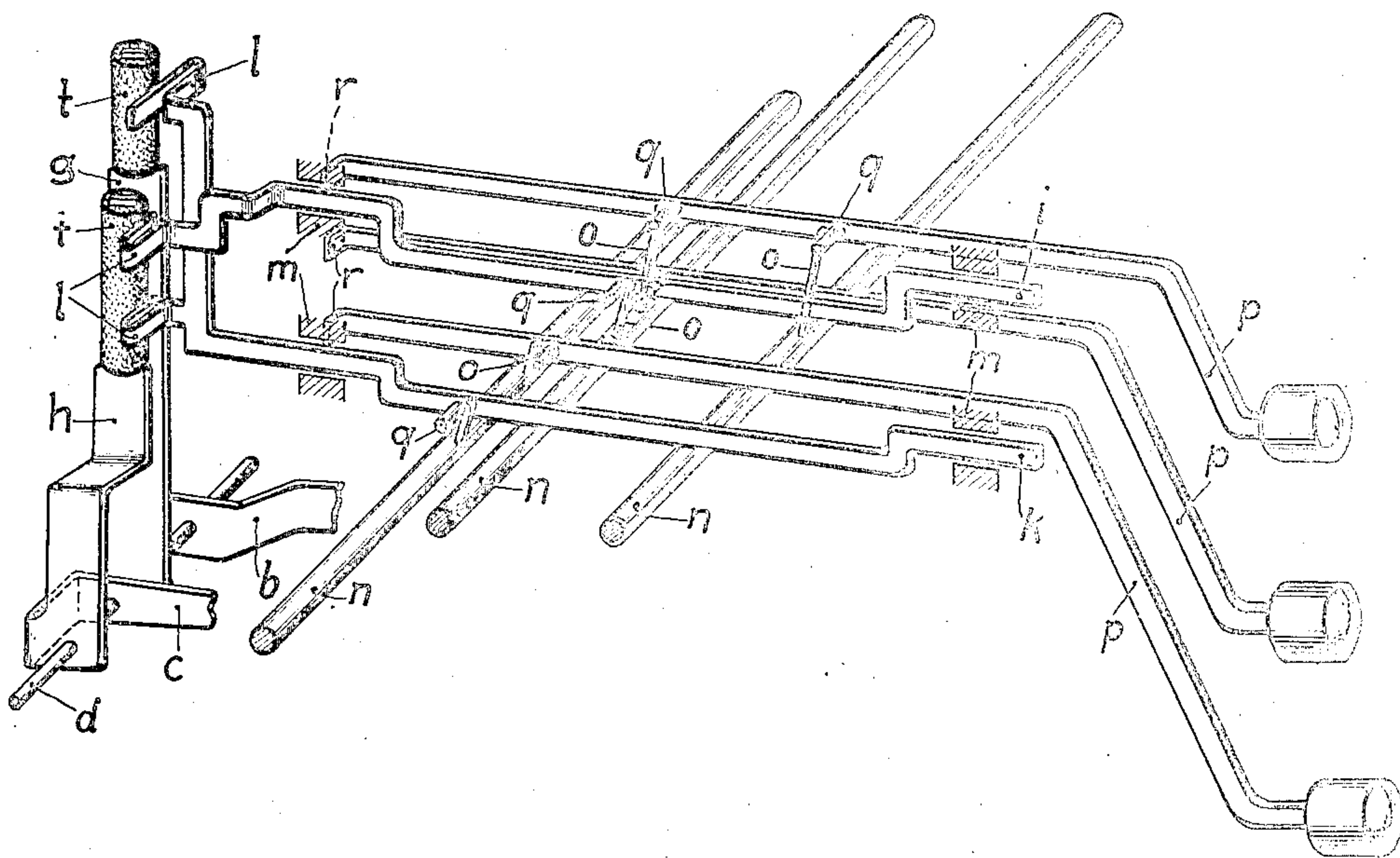
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2 Sheets-Sheet 2

*Fig. 3.*



Inventor  
Ernst Hohner  
by Max D. Ordmann  
Attorney



## UNITED STATES PATENT OFFICE

ERNST HOHNER, OF TROSSINGEN, GERMANY

BASS MECHANISM FOR ACCORDIONS

Application filed January 2, 1932, Serial No. 584,518, and in Germany March 28, 1931.

The present invention relates to accordions, and particularly to a novel mechanism for coupling the air valves so as to combine any number of them at will on single keys at any desired point of the keyboard and to simultaneously open a plurality of more or less widely spaced air valves with each key of the board. Furthermore, any number of parallel keys may be arranged for any key at any points of the keyboard to move one and the same group of valves by one key at two, three or more points of the board. In this way the reeds can be fully utilized in all variations, the accompanying music rendered extremely powerful and varied and controlled by the keys so that the latter can be touched in the most convenient and efficient manner. Various kinds of actions aiming at the same objects as the invention are known already, but they are more or less imperfect, and their chief drawbacks are much noise, long key path involving much dead travel, heavy touch, interference with air motion by a practically complete masking of the air valves, too great weight, too large space requirements, too complex design, difficult manufacture by craftsmanship methods and therefore expensive, too many possibilities of trouble and stoppage, excessive wear, great difficulty in disassembling, too small and uneven key stroke, and, as a rule, primitive appearance.

In the bass action according to the invention the defects mentioned are eliminated by the peculiar construction and arrangement of the parts.

By way of example, the invention is illustrated in the accompanying drawing, in which Figure 1 is a top view of the bass action in the bass box, with some parts broken away; Fig. 2, a cross section of the bass box; and Fig. 3, a diagram of the most important parts of the action.

Referring to the drawing: On the panel *a* of the frame the bass levers *b* and the accord levers *c* are disposed on a common wire shaft *d*. The valves *e* are closed by springs in the usual way and can be opened by the vertically directed lever arms *g* or *h* by

means of the slides *i* or *k* having the pressure fingers *l* and being arranged on edge in the ledges *m* of the superposed frames in each of which a set of wire shafts *n* is provided in a horizontal layer and spaced in the widest possible way. The wire shafts *n* are fitted with the levers *o* connected with the valve slides *i* and *k* as well as with the key slide *p* by the transverse carrier *q* by the action of the force of the springs *f* for closing the valves. The travel of the key slides *p* is limited by their bend *r* hugging the ledges *m* and that of the slides *i* and *k* by their pressure finger *l* which hugs the lever arms *g* and *h* of the levers *b* and *c*. To prevent the slides from producing noise at their striking points, the latter are fitted with the felt coverings *s* and the vertical lever arms *g* and *h* are covered with the sleeves *t* made from cardboard, rubber or similar shock-absorbing material.

The novel arrangement of the wire shafts *n*, which are known per se, makes it possible to space them so widely that no other existing construction can be compared to it and the air waves have the greatest possible freedom of motion while the bass box either has the same or a smaller size. The widely spaced wire shafts *n* afford the added advantage that the pin levers *o* disposed one behind the other in the direction of the slides are no longer in each other's way and need not be cranked or bent but can remain straight. The vertical superposition of the wire shafts *n* is, finally, advantageous for the reason that the levers *o* need only half their previous length and they as well as the shafts *n* can be made weaker than now. Dangerous deflections causing dead travel are avoided.

Since the valves *e* must be arranged in two rows to accommodate the reeds, the levers *c* can be much shorter than the bass levers *b*, which, at equal key travel, would result in a considerable inequality in the valve stroke if the key pressure were transmitted to the lever arms *g* and *h* by means of intermediate members of the known type, such as slides and the like. To render an action really useful, provision should be made for simulta-



neously raising valves in the first and second row by means of one and the same key while the valve stroke remains uniform throughout, and the invention attains this object by keeping the two pressure fingers *l* on the slide *k* at a distance from one another which will compensate for the difference in length of the lever arms. It is therefore possible to simultaneously engage and press back with the same slide *k* two individually movable levers *g* and *h* arranged side by side at a different distance from the fulcrum. The lateral U-shaped bend of the fingers *l* permits central distribution of pressure on the valve slide, smaller or larger relative spacing of the lever arms *g* and *h*, unchecked passage with respect to one or the other lever arm and rapid and easy adjustment of the fingers by compressing or spreading apart the U-shaped portion to provide for contact with the lever arms *g* and *h*.

The same applies to the valve slide *i* having only one pressure finger *l*, the slide *i* being capable of separately moving one of the two valve levers. To reduce the length of the levers *g* on the shafts *n* and the height of the action as much as possible and still get along with little key pressure, the slides *i* and *k* are bent at the point between the ledges or at least for the length coming into question for the catch *q* so as to be nearer the shafts *n* and the lever arms of the shafts concerned may be shorter than the lever arms *o* for the key slides *p* on the same level, so that the catches *q* engage the longer lever arm *o* and the valve slides are driven by other and shorter lever arms *o*.

It would of course be possible though less efficient to attain the same object by means of straight slides *i* and *k* arranged at a correspondingly deeper level.

I claim:—

1. A bass action in accordions comprising spaced air valves arranged in rows, springs for closing the said valves, levers of unequal length connected with the said valves, two perpendicularly superposed layers of wire shafts, the shafts of said two layers being perpendicular above one another, valve slides perpendicular to the said shafts and coupled with the said air valves and shafts, and keys controlling the said coupled members, each key opening simultaneously a plurality of valves.

2. A bass action in accordions comprising spaced air valves arranged in rows, springs for closing the said valves, levers of unequal length connected with said valves and arranged in a series bearing on a common wire shaft, two layers of wire shafts, said wire shafts of the two layers being perpendicular to one another, valve slides perpendicular to said shafts and coupled with said air valves and shafts and keys con-

trolling said coupled members, each key opening simultaneously a plurality of said valves.

3. A bass action in accordions, comprising spaced air valves arranged in rows, springs for closing said valves, levers of unequal length connected with said valves, valve slides connected by spring action to said bass valve levers and having pressure fingers, some of said slides simultaneously lifting a valve lever of both the front and rear rows, the difference in length of the valve levers being compensated by the perpendicular distance of said pressure fingers to lift both valves equally high.

4. A bass action according to claim 3, in which the valve slides are each formed angularly with a perpendicular relatively short shank.

5. A bass action according to claim 3, in which the valve slides are each formed angularly with a perpendicular relatively short shank and the pressure fingers arranged on the said shanks are laterally bent in a U-shaped manner.

6. A bass action as per claim 3, in which pin levers are connected by catches with said wire shafts and valve and key slides, the lever arm acting on the valve slides, being shorter than the one acted on by the key slides.

7. In a bass action as per claim 3, in which catches connect pin levers attached to the wire shafts with valve and key slides, and the valve slide portion carrying the said catches is nearer to the axes of said pin levers than the key slide portion carrying the catches.

8. In a bass action according to claim 3, in which catches connect pin levers attached to the wire shafts with valve and key slides and the valve slide portion carrying the catches is cranked to be nearer the axes of the pin levers, the bearing points and ends being on the same level as one of the rows of the respective key slides.

9. In a bass action according to claim 3, in which the free pressure ends of the perpendicular arms of the valve levers are covered with a non-metallic and shock absorbing material.

10. In an accordion, the combination with valve slides and key slides, of wire shafts arranged in two superposed layers perpendicular to one another and means between said shafts and said slides for operating said valve slides from said key slides.

11. In an accordion, bass levers and accord levers and a common wire shaft on which said levers are borne.

12. In an accordion, valves arranged in two adjacent rows, accord levers and bass levers operatively connected to said valves, said two sets of levers being of different lengths, slides for operating said levers, and

pressure fingers on said slides for actuating said levers, said pressure fingers being arranged at such distance apart from one another as to compensate for the difference in  
5 length of said levers.

In testimony whereof I affix my signature.

ERNST HOHNER.

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