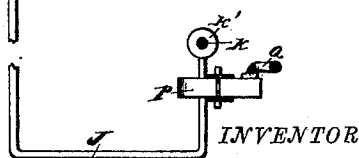


Patented July 30, 1889.



Edwin A. Voley,
By W. W. Feggen, Attorney

UNITED STATES PATENT OFFICE.

EDWIN S. VOTEY, OF DETROIT, MICHIGAN.

REED-ORGAN.

SPECIFICATION forming part of Letters Patent No. 407,800, dated July 30, 1889.

Application filed July 27, 1887. Serial No. 245,447. (No model.)

To all whom it may concern.

Be it known that I, EDWIN S. VOTEY, of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Reed-Organs; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to certain new and useful improvements in the construction of reed-organs, and has for its object, first, novel means for engaging the key-frame in place so that it may be readily removed; second, novel means for securing the name-board in place so that it may be readily removable; third, a novel bell or chime attachment; fourth, a novel construction of the action for striking the chime; fifth, a novel construction of the muffles so that they may be readily adjusted; sixth, the general construction, combination, and arrangement of devices, as more fully hereinafter described, and more fully pointed out in the claims.

In the drawings, Figure 1 represents a vertical cross-section of a device embodying my invention; Fig. 2, a rear elevation of features of my invention. Fig. 3 is an end elevation showing the engagement of the key-frame upon end blocks and the name-board upon the key-frame. Fig. 4 is a plan view of features of my invention, showing the rock-shaft in its engagement with the knob and connecting-rod.

A represents the name-board; *a*, end boards by which the name-board is mounted upon the key-frame.

B represents the key-frame; C, the end blocks upon which the key-frame is mounted.

D represents the reed-board; D', the air-chamber; *d*, the valves located underneath the reed-board.

B' represents the keys mounted upon the key-frame; *b*, the pins for operating the valves.

In order to get ready access into the interior of an organ-action, it is desirable to make the key-board removable; and this I accomplish by providing the end blocks each with a hook *c*, to engage upon a screw or stud *b'*

upon the key-frame, and whereby it may be held firmly in place or be easily disengaged therefrom, the hooks forming the only fastening to hold the key-frame in place, except that the key-frame is perforated, as shown at *b*², to engage upon dowels *c'*, located upon the end blocks. So, also, it is desirable to make the name-board removable; and this I accomplish by providing the key-frame at each end with a hook *b*³, to engage upon a screw or stud *a'* upon the end boards, upon which the name-board is mounted. These end boards may be provided with dowels to engage in corresponding sockets *b*⁴ in the key-frame. In this manner the name-board is held firmly in place, while it may be easily detached by simply releasing the hooks which engage the key-frame upon the end blocks. Said frame, together with the name-board, may all be removed without disengaging the name-board.

E represents a chime of bells mounted in any suitable manner.

E' represents standards upon which the chime is supported. To sound the chime each key is provided with a striking mechanism, consisting of a supporting bar or yoke F, firmly engaged at one end upon the rear of the key, as by means of screws *f f'*. The end of the yoke adjacent to the key is preferably constructed on the arc of a circle, as shown, as by such a construction it is evident that the position of the yoke relative to the key may be readily changed to any desired position by loosening one of the screws *f f'* and tightening the other. In this manner the yoke may be rocked to any position desired relative to the key and secured in such position by set-screws, thus permitting a very ready and accurate adjustment of the yoke, so as to cause the hammers to strike in any proper manner.

F' represents a hammer pivotally engaged at the end of the hammer-arm *f*² upon the rear of the yoke, the end of the hammer-arm extending outward beyond the rear face of the yoke, as shown. The yoke may be provided with a layer of felt *f*³, to cushion the hammer as it drops from the bell.

At the rear of the series of hammers I locate a series of arms G, having a yielding engagement at their lower ends upon a supporting-block H, the construction being such that

the upper ends of said arms may move backward and forward, said upper ends provided also with a shoulder *g*, to engage the rear extended end of the hammer-handle to trip the hammer, the forward end of the yoke being firmly engaged with the key. It will be evident that when the key is depressed the rear end of the key rising carries with it the yoke, the rear end of said yoke rising with the hammer and its handle pivotally engaged therewith. It is evident that the extended end of said handle, being engaged under the shoulder *g* of the yielding arm *G*, will cause the handle to be tripped, so as to throw the hammer upward into contact with the bell; but as the rear end of the yoke ascends the extremity of the handle as the hammer rises will ride out from under the shoulder and against the inner face *g'* of said arm, when the arm will tilt rearwardly sufficient to allow the hammer to drop, and when the key is released the rear end of the yoke will descend, permitting the yielding arm to re-engage its shoulder over the extended end of the hammer-handle, said yielding arm being provided with a retracting-spring *G'*, to restore it to its normal position when the key is released. The rear extremity of the handle may be cushioned with leather or other suitable material, as shown at *f*⁴. This will explain the operation of the chime when the hammer is brought into action. The chime is brought into action or thrown out of action, as the case may be, by the means of novel mechanism which I will now proceed to describe.

I represents the frame or bed located beneath the key-frame and supporting thereon a cranked rock-bar *J*. One extremity of said bar is engaged with a stop-rod *k*, said rod being operated by a knob *K*. The rod *k* may be constructed with an integral eye at its lower end; but preferably it is engaged with a wooden block *k'*, to receive the projected end of the rock-bar. This rock-bar is so constructed that upon pressing the rod the inner extremity of the rock-bar will have a forward movement, said inner extremity being properly engaged with a connecting-bar *L*, which in turn at its rear extremity is engaged with an oscillatory bar *M*, preferably constructed with a cranked portion *m*, having a bearing against the inner face of the yielding arm *G*. The extremities of said oscillatory bar are also cranked, the one to engage the connecting-bar and the other engaged with a spring *N*, for the purpose of retracting said rod when the force of the stop action is removed therefrom.

It will be obvious from this description and from the drawings that when the knob *K* is depressed the connecting-bar *L* will move forward and carry with it the upper cranked portion of the bar which bears against the yielding arms, permitting them to yield forward, thereby engaging the extremities of the hammer-handles, in which position the chime is

thrown into action. On the other hand, when it is desired to throw the chime out of action, the knob *K* is released or allowed to return to its normal position, when it will be obvious that the rear extremity of the rock-bar will move backward and force the oscillatory bar over in such a manner as to force back the yielding arms, and they are thus thrown out of engagement with the hammer-handle, so that the key may be operated without the chime being brought into action in connection therewith. The spring *N* will serve to throw the intermediate cranked section of the oscillatory bar backward to automatically disengage the yielding arms from the hammer-handles. It is obvious that this provides a very ready and efficient means for throwing the chimes into and out of action.

To hold the rock-bar *J* downward when the knob is depressed, so as to hold the chime in action for a desired period, the bed or frame *I* is provided with a jack *P*, pivotally engaged therewith. The forward end of the bed may be recessed to receive the edge of said jack to accomplish the pivotal engagement therewith. This jack is constructed with a cam-shaped inner face, and recessed at *p*, to project over the adjacent end of the rock-bar and lock it in position, a spring *p'* beneath the jack serving to throw the jack over the rock-bar, so that it shall be engaged within said recess.

To release the jack from engagement with the rock-bar, I provide a releasing-bar *Q*, which may be bent to desired shape, and engaged at its lower end with the jack, in such a manner as to rock it over and off from the rock-bar. This releasing-rod is operated by a releasing-knob *q*. The knobs *K* and *q* are in the nature of push-knobs, preferably, instead of requiring to be pulled out, as has been commonly the case, and they are preferably constructed to operate in substantially a vertical plane, so that the operator can readily manipulate the knobs by a single finger extended, without having to take his hand from the keys.

I make no claim in this application for the special mechanism last described, constituting the stop-action device, as the same forms the subject of a separate application filed by me July 5, 1887, Serial No. 243,409.

To muffle the bells of the chime after they have been hit with the corresponding hammers, I provide each yoke with a muffle-rod *R*, having a muffle of felt or other suitable material at its upper end to bear against the adjacent bell the instant the key is released. These muffle-rods are engaged at their lower ends with a block *R'*, curved on its lower face, and which may be readily engaged upon the yoke in any suitable manner, as by means of screws *r'* *r*². Should the outer end of the muffle-rods, with their muffles, require adjusting to more effectually accomplish their purpose, it will be evident that by releasing the screws *r'* *r*² the block may be rotated in rela-

tion to the yoke to any desired position, when it may be firmly re-engaged therewith, and thus the adjustment is readily accomplished.

It will be obvious that when the key is depressed the muffle-rod will be lifted off from the bell, and when the key is released the muffle-rod will drop to re-engage the muffle upon the bell to stop its vibration.

E represents the bells of the chime.

E² is a shaft or rod, which may be of wood or metal, although I prefer that it should be of metal.

E³ represents a series of washers interposed between the bells, so as to hold them in proper relation to the striking-hammers and to each other. These washers may be made of metal; or they may be of rubber or wood, and if made of rubber they may be either hard rubber or soft rubber. I prefer, generally, to make them of wood, the same being at once simple and effective.

In order to space the bells so that each one when inserted in the organ will be in proper relation to its particular bell-hammer, these washers should correspond in thickness to the spaces between the bell-hammers. The employment of these washers renders the particular fastening of the bells upon the rod and their exact adjustment with relation to their respective hammers a matter requiring no skill or labor and no useless expenditure of time, and brings these matters, which have required skill and considerable time and judgment, within the scope of an ordinary unskilled hand.

The bells are nested together, as shown; but this feature of nesting the bells forms, *per se*, no part of my invention, which in this connection consists simply in the method by which they are secured upon a connecting rod or bar with intermediate washers. A chime of bells thus constructed is clearly applicable for any of the various kinds of musical instruments.

Instead of making the washers separate from the bell, the bell might be cast or otherwise formed with a shoulder at its center corresponding with the washer E³, made integral therewith, and then have the same bored through, so as to string upon the rod or bar. In this case these shoulders would come together and hold the bells separated in the same way that they would be held and separated by the separate washers. I would have it understood that my invention contemplates such a construction.

I am aware of the Letters Patent to Butterit, No. 142,768, of September 16, 1873, in which the bells are nested upon a screw-cut rod, and each bell is, by nuts above and below, which are run upon the rod, adjusted to its proper position with respect to its bell-hammer. This, however, requires the labor of a skilled hand in order that the bells may be properly adjusted. I do not claim such a construction; but my construction is designed to

avoid the necessity of this careful adjustment or the necessity of a skilled hand, the bells being simply strung upon a rod with intermediate washers, which are of the proper predetermined size for giving each bell its exact and particular relation to its bell-hammer, the whole being then bound together by a single nut or equivalent fastening at the end of the rod.

What I claim is--

1. In an organ, the combination, with a key pivoted near its inner end, of a yoke adjustably engaged with its inner end and extending beyond the same about the length of the key, and a hammer having its handle pivotally engaged with the rear end of the yoke and extended therefrom to engage the tripping-jack, said yoke provided with adjustable muffles, substantially as described.

2. In an organ, the combination, with a key, of a yoke connected with its inner end, a hammer pivotally engaged with said yoke, and a muffle also engaged in said yoke, the connection of the yoke to the key and the muffle to the yoke being each an adjustable rocking connection, substantially as described.

3. In an organ, the combination, with a key, of a yoke engaged therewith at its rear extremity, a hammer having its handle pivotally engaged upon the rear end of the yoke and extended therefrom, and a muffle engaged with said yoke, the end of the yoke adjacent to the key and the lower end of the muffle adjacent to the yoke each constructed on the arc of a circle, substantially as and for the purposes described.

4. The combination, with an organ and its chime of bells, of a series of yielding arms or tripping-jacks G, adapted to engage the bell-hammers, and in connection with said tripping-jacks an oscillatory bar M, against which they impinge, said bar connected with a stop for operating the same, the construction being such that by advancing or withdrawing said bar the said jacks are brought into or thrown out of engagement with said hammers, substantially as described.

5. The combination, with an organ, of a chime of bells, hammers to strike said bells, yielding arms to engage the hammer-handles, and mechanism to throw said arms out of engagement with said hammers, substantially as described.

6. The combination, in an organ, of a key provided with a yoke firmly engaged therewith, a hammer having its handle pivotally engaged with the rear of the yoke and extending therefrom, a device to engage the extended ends of said hammer-handles, and means for throwing said device into and out of operation with said hammer-handles, substantially as described.

7. In an organ, the combination of a chime of bells nested into each other, a rod or bar for supporting said bells, hammers to strike

said bells, washers placed between the bells
along said rod or bar and each having a
thickness corresponding to the space between
the bell-hammers, arms to engage the ham-
5 mer-handles, and means for throwing the
said arms out of engagement with the ham-
mers, substantially as described.

In testimony whereof I sign this specifica-
tion in the presence of two witnesses.

EDWIN S. VOTEY.

Witnesses:

M. B. O'DOHERTY,
W. H. WILLEBRANDS.