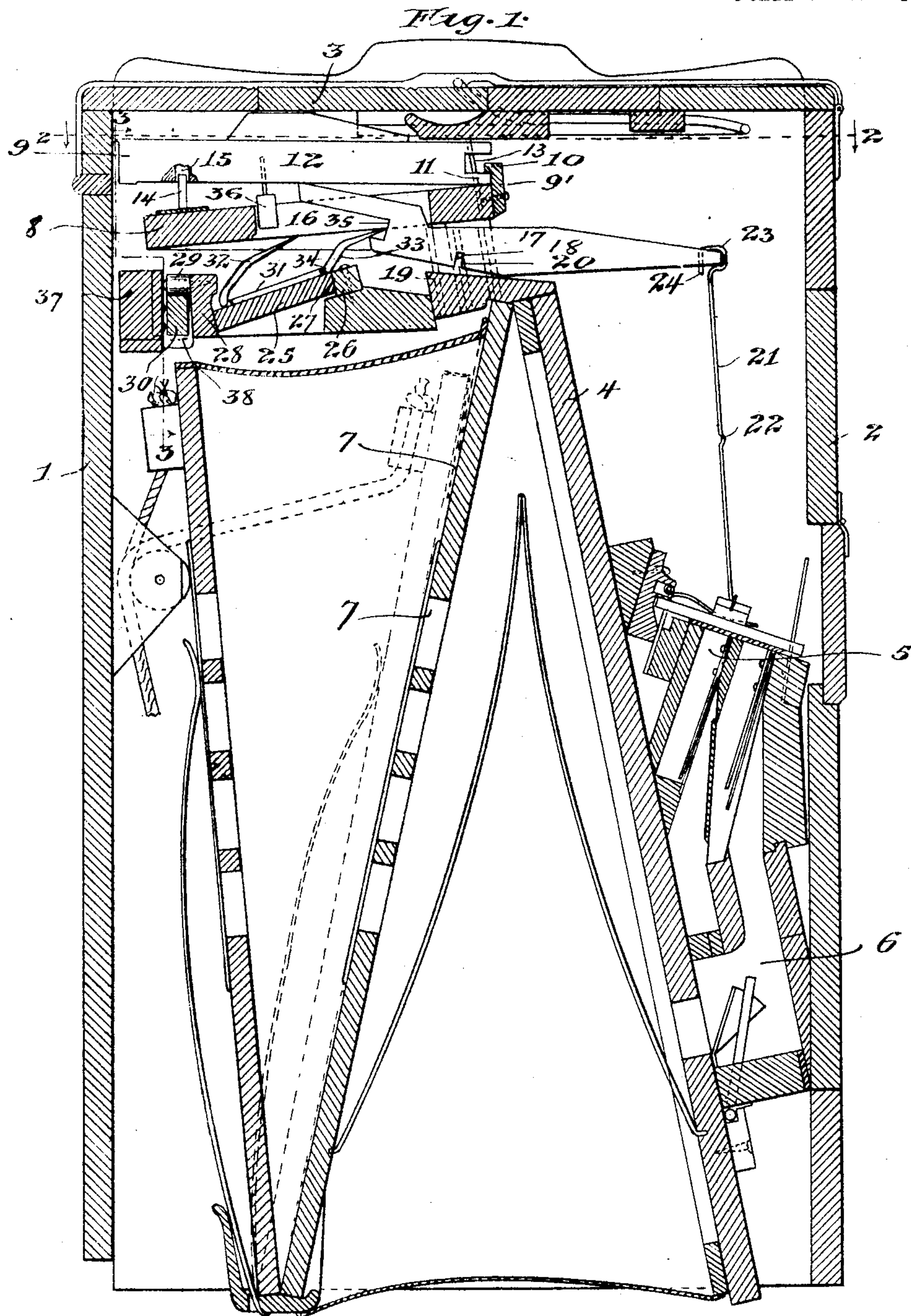


D. SCHUSTEK.
COUPLER MECHANISM.
APPLICATION FILED AUG. 20, 1904.

2 SHEETS—SHEET 1.



Witnesses,
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2 SHEETS—SHEET 2.

Fig. 3

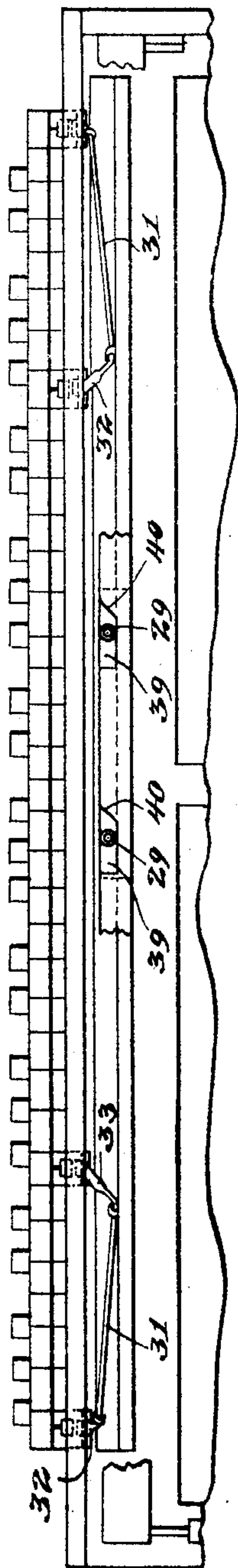
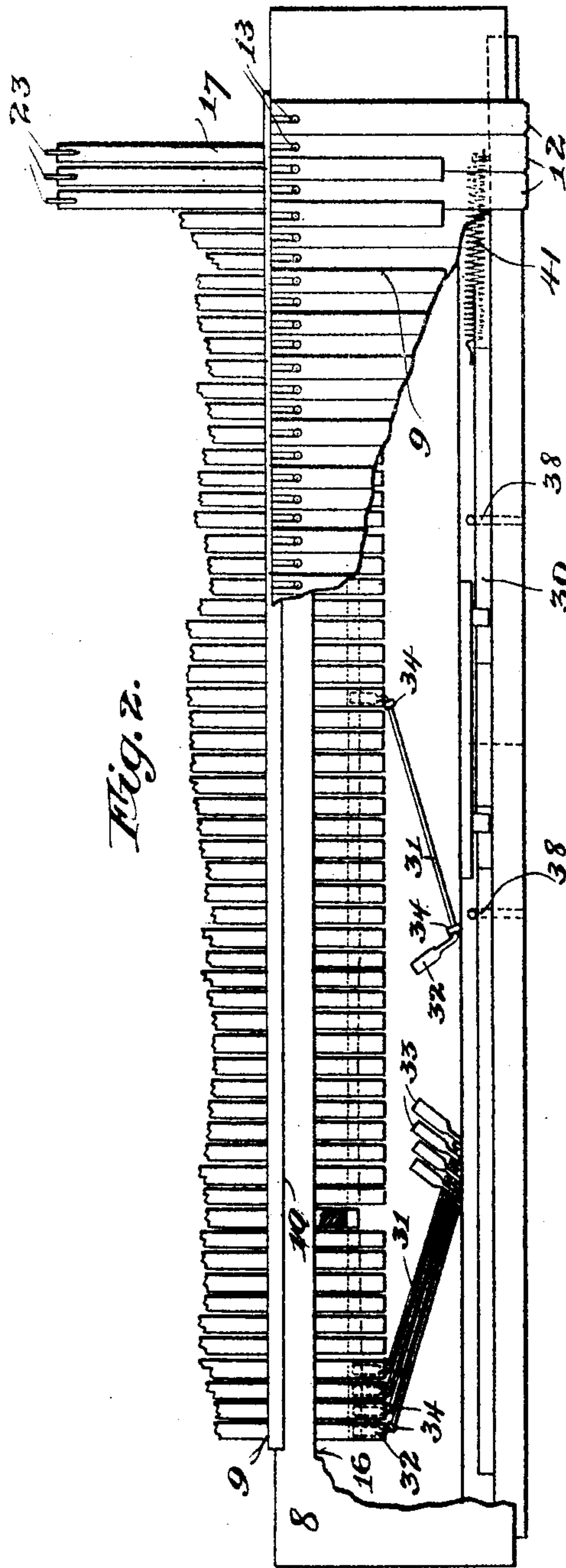


Fig. 2.



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UNITED STATES PATENT OFFICE.

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COUPLER MECHANISM.

No. 798,459.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Original application filed January 2, 1902, Serial No. 88,212. Divided and this application filed August 20, 1904. Serial No. 221,554.

To all whom it may concern:

Be it known that I, DANIEL SCHUSTEK, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Coupler Mechanism, of which the following is a specification.

This invention relates to improvements in coupler mechanism for reed-organs, and has among its salient objects to provide an im-
10 proved mechanism for actuating both the octave-coupler mechanism and one or more sets of reeds through the same lever mechanism, to provide a mechanism which is simple and compact and yet which is strong and conven-
15 ient, and in general to provide details in improvement tending to make an economical and practicable construction for the purposes hereinafter more fully set out.

To the above ends the invention consists in
20 the matters hereinafter described, and more particularly set forth in the appended claims, and the invention will be readily understood from the following description, reference being had to the accompanying drawings, in
25 which—

Figure 1 is a transverse vertical sectional view through the organ mechanism and casing therefor. Fig. 2 is a fragmentary plan view on line 2 2 of Fig. 1 with a portion of
30 the keyboard broken away to expose the arrangement of the mechanism beneath the keys. Fig. 3 is a view in front elevation of the upper portion of the mechanism, taken on the indirect line 3 3 of Fig. 1.

35 The subject-matter of the present invention is divided out of my present pending application for patent on improvements in reed-organs, filed January 2, 1902, Serial No. 88,212, and to which reference is made for a more de-
40 tailed description and illustration of the organ mechanism and casing thereof than is necessary to a proper and sufficient showing and understanding of the subject-matter of the present invention.

45 Referring to the drawings, 1, 2, and 3 designate, respectively, the front, back, and top walls of an organ-casing, as shown in the transverse vertical sectional view of Fig. 1, the top wall 3 being adapted to be raised and adjusted
50 to form a book-rest.

4 designates a longitudinally-extending partition arranged to extend in an inclined position from end to end of the casing and being made rigid therewith. Upon one side of said

partition is mounted the reed mechanism, (des- 55
ignated as a whole 5,) together with a wind-
chest 6, while upon the other side of said par-
tition is mounted the bellows mechanism, (des-
ignated as a whole 7.)

Describing now the matter involved in the 60
present invention, 8 designates as a whole a
key-plate which is suitably secured at each
end and arranged to extend underneath and
the full length of the bank of keys, (designated
as a whole 9.) Said key-plate is provided at 65
its rear margin with an upstanding flange
member 9', having an overhanging or ledge
portion 10, with which is engaged the lower
arm 11 of the bifurcated end of each key 12.
The forked end of each key is also slotted 70
vertically a short distance inwardly from its
end, and a series of guide-pins 13 is mounted in
the key-plate and arranged to project up-
wardly to receive the said slotted ends of the
keys, as shown clearly in Fig. 1. A second 75
series of guide-pins 14 is mounted in the op-
posite or front edge of the key-plate, which
pins are severally engaged with correspond-
ing slots 15, formed in the under surfaces of
the keys, the slots 15 in the keys which en- 80
gage the pins 14 being so formed as to pre-
vent endwise movement of the key in a direc-
tion to release it from engagement with the
ledge 10. The depth of these slots is suffi-
cient to permit the necessary oscillation of the 85
key in playing.

Describing the means by which movement
of the key is transmitted to the correspond-
ing reed-cell pallet, the key-plate 8 is longi-
tudinally slotted centrally throughout the full 90
length of the bank of keys, as indicated at 16,
and through this slot are arranged to project
the front ends of a series of levers 17, each
of which is pivoted at a point between its ends
upon a transverse pivot stud or bar 18. The 95
pivotal supports 18, which carry the several
levers, are mounted in axial alinement with
each other in a supporting-block 19, which is
conveniently interposed between the lower
side of the key-plate 8 and the upper edge of 100
the sounding-board or partition 4, said sup-
porting-block being mortised at regular in-
tervals throughout its length to receive the
several levers. A minor feature of improve-
ment consists in forming the pivot-apertures 105
of the levers in the form of open slots 20, so
that when the key-plate is removed any one
or more of the levers may be removed with-

out disturbing the rest by simply lifting it out of its mortise. The rear end of each lever is operatively connected with the corresponding pallet by means of the actuating-rod 21. The peculiar construction of these rods is a feature of some importance. As the position of the key is made to depend upon the position of the lever, it is important that the actuating-rod be fitted to the exact length intervening between the end of the lever and the pallet with which it is connected at its other end, and to this end I provide the actuating-rod at a point intermediate its length with a kink or bend 22, which may be conveniently closed or opened slightly to vary the length of the actuating-rod without disengaging the latter from the connected parts. It is further important that these actuating-rods be so constructed that they may be instantly disengaged when it is so desired, and to this end I provide each rod with an open loop 23, the free end of which terminates in a pin-like portion 24, which extends substantially parallel with the main body of the rod and engages a suitable aperture formed through the end of the lever at a distance inwardly from its extreme end slightly less than the transverse width of the loop 23. The engagement of the actuating end of the rod with the pallet is by means of an eye formed at right angles to the loop 23, so that said loop is normally held in alinement with the lever and in proper engagement with the latter; but in case it be desired to disengage said parts the loop 23 may be twisted around through an angle of ninety degrees, in which position the lower side of the loop is carried out of engagement with the under side of the lever and the pin portion of the rod may be disengaged from the lever. Owing to the resilient character of the wire of which the rods are made, this is perfectly feasible without permanently distorting the rod and the assembling of the parts is obviously the reversal of this operation.

Next describing the coupler mechanism, which mechanism is operable through the medium of the several levers, 25 designates a coupler-lever support taking the form in the present instance of a flat board-like bar arranged to extend transversely and horizontally beneath the key-plate and pivotally attached at its rear edge to a fixed supporting-bar 26, the pivotal connection being at the upper rear edge of the lever-support, as indicated at 27. The normal position of said lever-support is inclined forwardly and downwardly, as shown in Fig. 1, and at its front edge it is provided with a flange-like upward extension 28, which carries a plurality of horizontally-extending rollers 29, (see Fig. 3,) mounted upon suitable pins or studs and engaging an endwise-reciprocatory cam-bar 30, whereby the lever-support is normally held in the position shown in Fig. 1. Each of the coupler-

levers 31 constitutes, in effect, a rock-bar provided at each end with a crank portion, as 32 33, (see detail Figs. 2 and 3,) said levers being mounted to oscillate in suitable eye-like supports or bearings 34 upon the support 25, and the distance between the two crank portions being equal to the distance between octaves. The rearmost end of each rock-lever is arranged to project within a groove or recess 35, formed in the corresponding lever in alinement therewith, while the opposite cranked end underlies a plunger-like stud or projection 36, mounted upon the under side of the key one octave removed from the lever with which the opposite crank is engaged. The length of the stud 36 is such that in the normal position of the coupler-support the keys may be depressed without bringing them into engagement with the coupler-levers; but when the coupler-support 25 is tilted up into approximately horizontal position in a manner hereinafter to be explained the depression of a key brings the projection 36 into bearing with the subjacent coupler-lever and oscillates the latter downwardly, thereby oscillating the octave-lever with which its opposite end is engaged, and thus opening the pallet connected with that lever in addition to the pallet actuated by the lever directly engaged by the key.

Describing next the mechanism whereby the cam-bar 30 is supported and reciprocated, 37 designates a transverse frame-bar extending the full length of the organ-movement, and upon this are mounted a plurality of studs 38, which underlie the cam-bar 30 and support the latter, the projecting ends of said studs being upturned, so as to likewise hold the bar against lateral movement. In order to reduce the friction between the cam-bar and the supporting-studs, the latter are desirably provided with antifriction-rollers 29, journaled thereon, upon which the cam-bar directly rests. Referring to Figs. 2 and 3, the upper edge of the cam-bar is recessed, as indicated at 39, and provided with inclined shoulders 40, the rollers 29 being arranged to rest within the recesses 39 in the normal position of the cam-bar and being adapted to ride up the inclined shoulders 40 and rest upon the upper edge of the bar when the latter is reciprocated to lift the coupler-support. The recesses 39 are elongated, so that the cam-bar is capable of movement a substantial distance before the rollers 29 engage the inclined surfaces and begin to lift the coupler-support, this initial endwise movement of the cam-bar being utilized for operating the stop mechanism which controls one or more sets of reeds to bring the latter into operation before the coupler mechanism is operated. The cam-bar is normally held in retracted position by means of a coiled spring 41, (see Fig. 2,) connected with one end thereof and attached at its opposite end to the inner face of

the front casing, as indicated clearly in Fig. 2. In order to actuate the cam-bar against the tension of the spring, said bar is connected with a knee-swell, (not shown,) whereby it can be reciprocated at the will of the performer to lift the coupler-support, as hereinbefore fully described.

By the above-described construction an extremely light key-action, as well as an exceedingly quick response, is obtained, and while only one form of the invention is shown and described it is obvious that modifications and alterations in the details of construction and arrangement can be made without departing from the spirit of the invention, which I do not limit to said details except in so far as they are made the subject-matter of specific claims.

I claim—

1. In an organ-movement, the combination with a coupler-bar, a key and support therefor, of a lever pivotally mounted intermediate its ends and provided at one end with a pair of projecting portions, one of said portions operatively engaging said key and the other adapted to engage said coupler-bar, the opposite end of said lever being adapted to be connected with a reed-cell mechanism, substantially as described.
2. In an organ-movement, the combination with a coupler-bar, a key and support there-

for, of a lever provided intermediate its ends with an open pivot-slot, a pivot-support upon which said lever is removably mounted, said lever being provided at one end with a key-engaging portion and an undercut recess forming a lip for the engagement of said coupler-bar, substantially as described.

3. In an organ-movement, a key, a coupler-bar, a lever provided intermediate its ends with an open pivot-slot, a supporting-block provided with a pivot member upon which said lever is removably mounted, said lever having operative engagement at one end with said key and provided with a recess between the point of engagement with said key and its pivot, said recess being adapted to receive the end of said coupler-bar, the opposite end of said lever being adapted to be connected with the reed-cell mechanism, substantially as described.

4. In combination with an organ-movement, a key and a lever with operative engagement therebetween, said lever pivotally supported between its ends and provided at its key-engaged end with an undercut recess forming a lip located below the top surface of the lever for the purpose described.

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