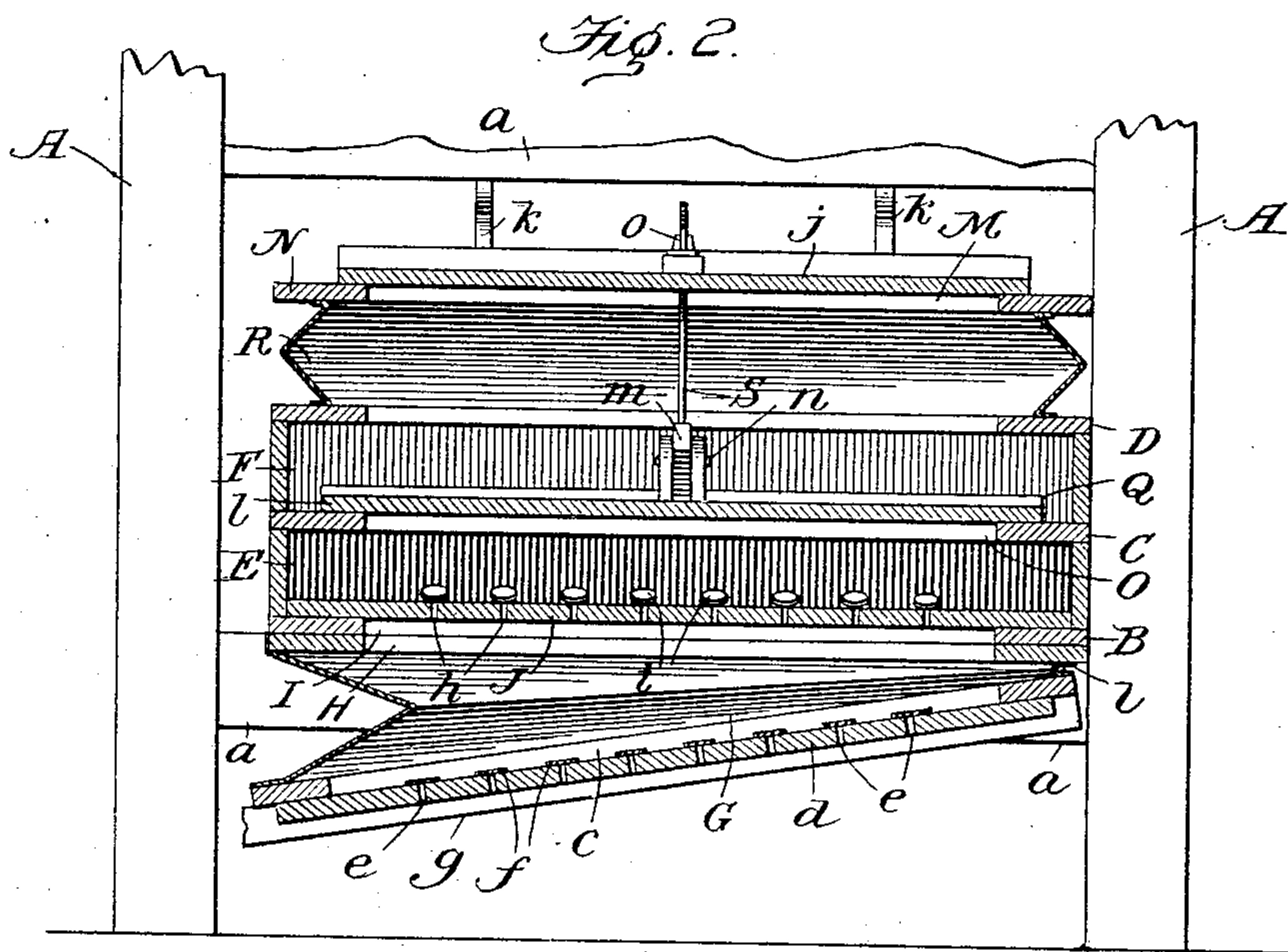
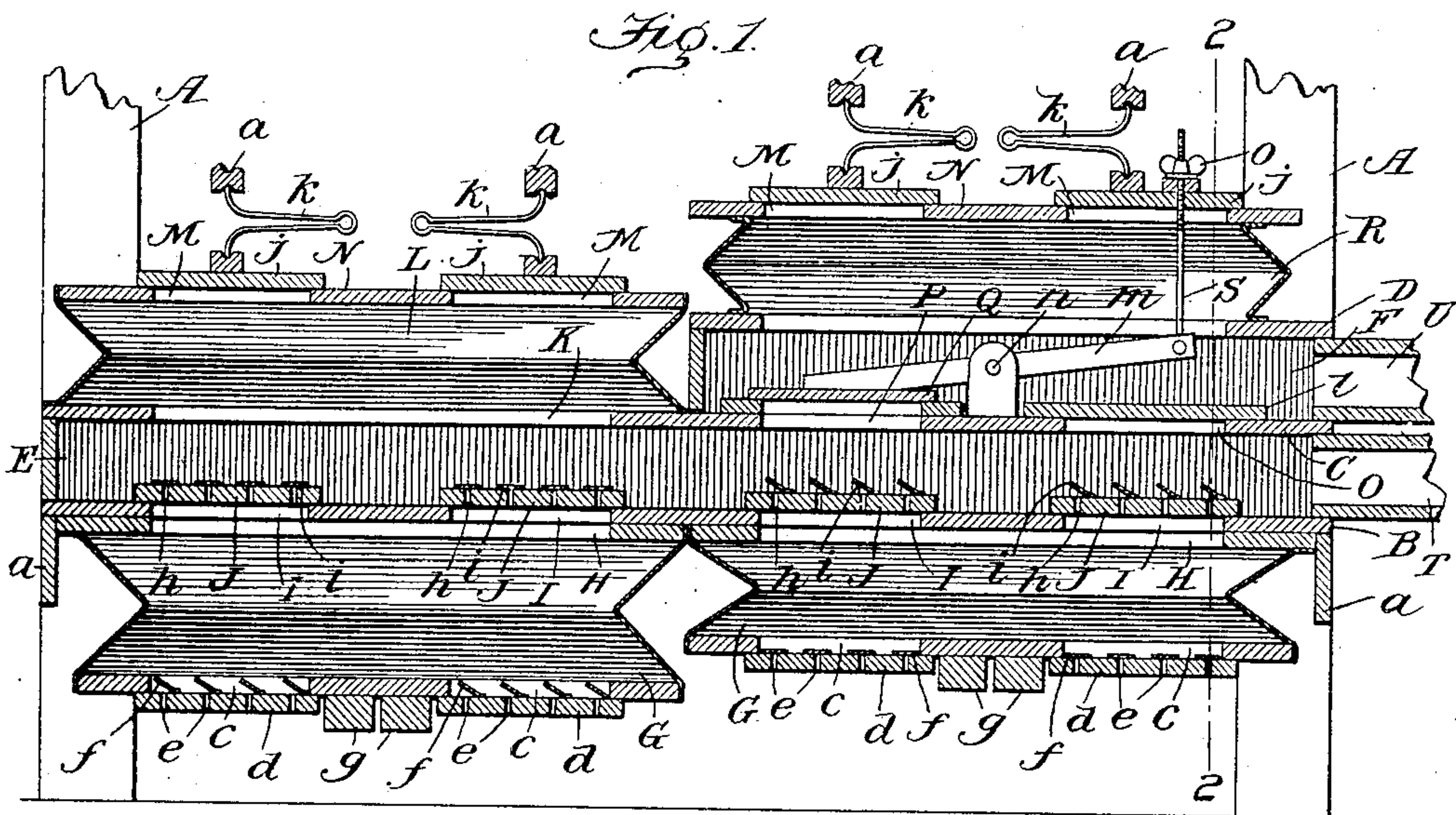


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P. WIRSCHING.
MULTIPRESSURE BELLOWS FOR PIPE ORGANS.

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MULTIPRESSURE BELLOWS FOR PIPE-ORGANS.

No. 865,467.

Specification of Letters Patent.

Patented Sept. 10, 1907.

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To all whom it may concern:

Be it known that I, PHILIPP WIRSCHING, a citizen of the United States, residing at Salem, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Multipressure Bellows for Pipe-Organs; and I do hereby 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 appertains to make and use the same.

My present invention relates to the wind supply for pipe organs and contemplates the production of what is hereinafter termed a multipressure bellows.

The invention has for its object the production of blowing and pressure apparatus, either mechanically or manually operated, whereby a greater variety of wind-pressures, and a greater general efficiency is obtained than ever before. This is accomplished by a novel organization and arrangement of feeders, wind-boxes and reservoirs which may be multiplied indefinitely to meet the needs and requirements of the largest and most extensive instruments, both as to their pneumatic action appliances, and the different pressures required for the various classes of speaking stops.

More particularly stated this invention employs a system of primary blowing feeders of any required number and size sufficient to produce the maximum wind supply for any particular organ; secondly, it employs a high-pressure wind-box adapted to communicate with said feeders; thirdly, a low-pressure wind-box in controllable communication with said high-pressure box; fourthly, a low-pressure reservoir in direct communication with the low-pressure wind-box, and fifthly, a high-pressure reservoir bellows similarly communicating with said high-pressure wind-box, adapted to maintain a uniform degree of pressure in the high-pressure wind-box, and indirectly govern the supply of wind to the low-pressure reservoir-bellows aforesaid. And, as stated, any or all of said elements may be multiplied indefinitely.

The invention will be hereinafter particularly described and pointed out in the claims following.

In the accompanying drawings which form part of this application, and whereon corresponding letters of reference indicate the same parts in both views: Figure 1 represents a longitudinal vertical section through a system of two feeders and their correlative parts, and, Fig. 2 represents a transverse vertical section taken on the line 2—2 Fig. 1, through one feeder, the high and the low-pressure wind-boxes, and the low-pressure reservoir-bellows thereover.

Reference being had to the drawings and letters of designation thereon, A indicates the uprights or corner posts upon which the structure is supported, erected at any convenient position within or adjacent to the

organ; and *a* represents transverse and also longitudinal sills connecting said posts A and completing the framework.

B, C and D are fixed horizontally-arranged partition members of special construction, constituting the bottoms and tops of high and low-pressure wind-boxes E and F respectively, as will later more fully appear. Beneath bottom B of the pressure-box E are secured bellows-feeders G (of which but two are shown) having the usual flexible sides and front, formed of suitable impervious material such as leather, and hinged as at *b* to the supporting frame. The bottom of each feeder G is broken by a rectangular panel or repair opening *c* covered by suitable panels or closures *d*, the latter perforated by inlet-ports *e*, and bearing upon its inner surface one-way or flap-valves *f* adapted to close said ports *e* through which air is taken into the feeders. Affixed to the bottom of feeders G is a projecting lever or levers *g* adapted to be actuated by any suitable mechanism such as a water or electric motor (not shown), or by power manually applied, while the top of said feeders are broken by an opening or openings H directly communicating with similar openings I in bottom B of the high-pressure wind-box E before referred to. These openings I are covered by panels or closures J having outlet ports *h* therethrough, guarded by non-return valves *i* thus located within said high-pressure box, and serving to trap the wind delivered thereto by the action of feeders G.

The top C of pressure-box E has formed therethrough an opening K of liberal dimensions communicating directly with the interior of a superimposed high-pressure reservoir-bellows L having the usual flexible sides, and provided with arm holes or repair openings M in its movable top N affording access to all parts beneath. The arm holes or repair M openings are provided with closures or covers *j*, and the said reservoir is counterweighted by any approved means, such as springs *k k* interposed between covers or closures *j j* and fixed points of support upon portions of the framework *a*.

The top C of pressure-box E, in addition to opening K aforesaid, is also broken by openings O and P beneath the low-pressure wind-box F, the former closed by a removable cover or closure *l* and serving merely as an arm hole or repair opening, the latter in controllable communication with the interior of said low-pressure box by agency of a valve Q carried at the end of a rock lever *m* fulcrumed at *n* upon the surface of top C and within box F aforesaid. Surmounting the low-pressure wind-box F, and in open communication therewith, is a low-pressure reservoir-bellows R, similar in construction to reservoir L the functions of the two being also similar with relation to their re-

spective pressure wind-boxes. Here, however, in addition to the movable top N, arm holes or repair openings M, covers *j* and springs *k* as aforesaid, a vertically movable screw-threaded rod S is provided, in
 5 pivotal connection with rock-lever *m*, and this passing upward through the movable top N is provided with an adjustable lifting-nut *o* for elevating said lever and thereby seating its valve Q with each inflation of the reservoir to its predetermined limit.

10 Opening out of the high-pressure wind-box E is a wind-trunk T from which pressure is supplied to all intermediate stations, thence to the pneumatics and pneumatic appliances, as well as to those musical pipes
 15 ing out of the low-pressure wind-box F is another wind-trunk U for supplying pipe wind at uniform predetermined pressure to the speaking stops of the organ.

The several parts of my invention having been constructed and arranged substantially as above set forth,
 20 their use and operation may be briefly stated as follows: Elevation of the movable bottom members of feeders G, simultaneously or dissimultaneously, results in delivering the contents of said feeders through outlet ports *h*, past non-return valves *i* to the interior
 25 of high-pressure wind-box E, where, by action of said valves it is trapped against return to the feeders during the down stroke to replenish the latter with a fresh wind supply through its one-way valves *f* in the usual manner. At the beginning of the operation it
 30 will be noted that the normal condition of the high and low pressure reservoirs is that of deflation under influence of their respective counterweighting springs *k k*, and as a consequence valve Q is unseated, thus
 35 affording communication between the low-pressure reservoir R, the low-pressure wind-box F, and the high-pressure wind-box E, with which latter the high-pressure reservoir L is in communication at all times. Repeated operation of the feeders G first fills the high-
 40 pressure wind-box E, then through its top opening P the low-pressure wind-box F, and thereafter the low-pressure reservoir R above, until same has reached its predetermined limit as indicated by Fig. 1 of the drawings. Thereupon the movable top of said reservoir R
 45 engaging the previously adjusted lifting nut *o* automatically cuts off the wind-supply from high-pressure box E by elevating one end of the rock lever *m* and seating valve Q at its opposite end. Continued operation of the feeders G next results in more fully inflating the high-pressure reservoir L, lifting its movable
 50 top N against its resisting springs *k k*, and compressing the air therein to a degree corresponding with that of the high-pressure wind-box E. As pressure is now drawn from the high-pressure wind-box E to meet requirements of the pneumatic action appliances, and
 55 for other high pressure purposes, the supply in said box is augmented from the high-pressure reservoir L, which in turn is replenished by the intermittent action of feeders G as aforesaid, said feeders being ordinarily under control of a suitable motor and the throttle of
 60 the latter automatically controlled by the rise and fall of said reservoir bellows L. On the other hand, as pressure is drawn from the low-pressure wind-box F for the speaking stops of the organ, the movable top of low-pressure reservoir R descends carrying with it
 65 lifting nut *o* and rod S, thus permitting pressure from

within box E to lift the valve Q and replenish the wind-supply in low-pressure box F and its storage reservoir R as aforesaid.

Having thus described my invention it should be understood that the system here disclosed may be variously modified and multiplied without in the least departing from its spirit; and the particular arrangement or location of the various elements of the invention is largely a matter of individual requirements, and conditions surrounding any particular organ in
 75 course of construction.

Therefore, that which I now claim and desire to secure by Letters Patent is:

1. In a multipressure bellows for pipe organs the combination with high and low pressure wind boxes in controllable communication, of a feeder for supplying wind to said boxes, a low pressure reservoir, a valve adapted to close communication between said wind boxes, a rock lever for carrying said valve, and an adjustable connection between the opposite end of said lever and the movable member of said low pressure reservoir, substantially as described. 80

2. In a multipressure bellows for pipe organs the combination with high and low pressure wind-boxes in controllable communication, of a feeder for supplying wind to said boxes, a low pressure reservoir, a valve adapted to close communication between said wind boxes, a rock-lever fulcrumed in said low pressure wind box carrying the said valve, and an adjustable connection between said lever at the opposite side of its fulcrum and the movable member of said low pressure reservoir, substantially as described. 85

3. In a multipressure bellows for pipe organs the combination with high and low pressure wind-boxes in controllable communication, of a feeder for supplying wind to said boxes, a counterweighted low pressure reservoir surmounting said low pressure wind box, a valve adapted to close communication between said wind boxes, a rock lever for carrying said valve, an adjustable connection between said lever at the opposite side of its fulcrum and the movable member of said low pressure reservoir, and closed arm holes in said reservoir and wind-boxes whereby access may be had to the interiors thereof, substantially as described. 90

4. In a multipressure bellows for pipe organs the combination with high and low pressure wind-boxes and a suitable feeder, of a low pressure reservoir surmounting said low pressure wind box, repair openings in said reservoir and wind-boxes, closures for said repair openings, a valve interposed between the low pressure wind-box and said high pressure wind box for controlling communication between them, a lever fulcrumed in said low pressure wind-box carrying said valve, and an adjustable connection between the free end of said lever and the movable member of said low pressure reservoir, substantially as described. 100

5. In a multipressure bellows for pipe organs the combination with high and low pressure wind boxes a feeder and a low pressure reservoir, of repair openings in each of said wind boxes feeder and reservoir members arranged in alinement, and removable closures for each of said openings, substantially as described. 105

6. In a multipressure bellows for pipe organs the combination with high and low pressure wind boxes a feeder and a low pressure reservoir, of repair openings in each of said wind boxes feeder and reservoir members arranged in alinement, removable closures for each of said openings, intake valves carried by said feeder and high pressure wind box closures, and an automatic valve controlling communication between said wind boxes, substantially as described. 110

In testimony whereof I affix my signature, in presence of two subscribing witnesses.

PHILIPP WIRSCHING.

Witnesses:

WM. E. DYRE,

HUGH M. STERLING.