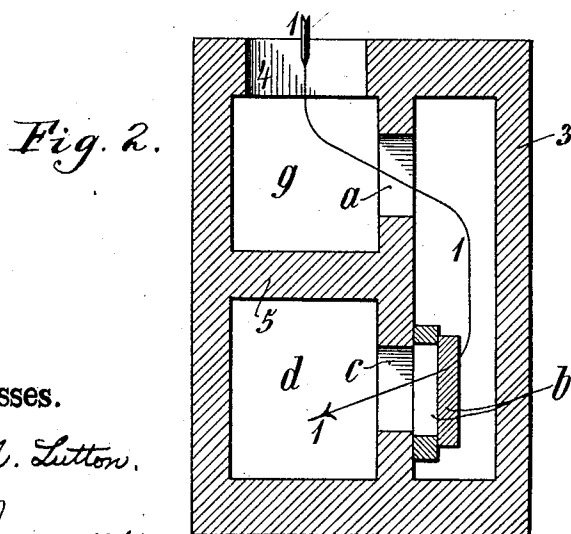
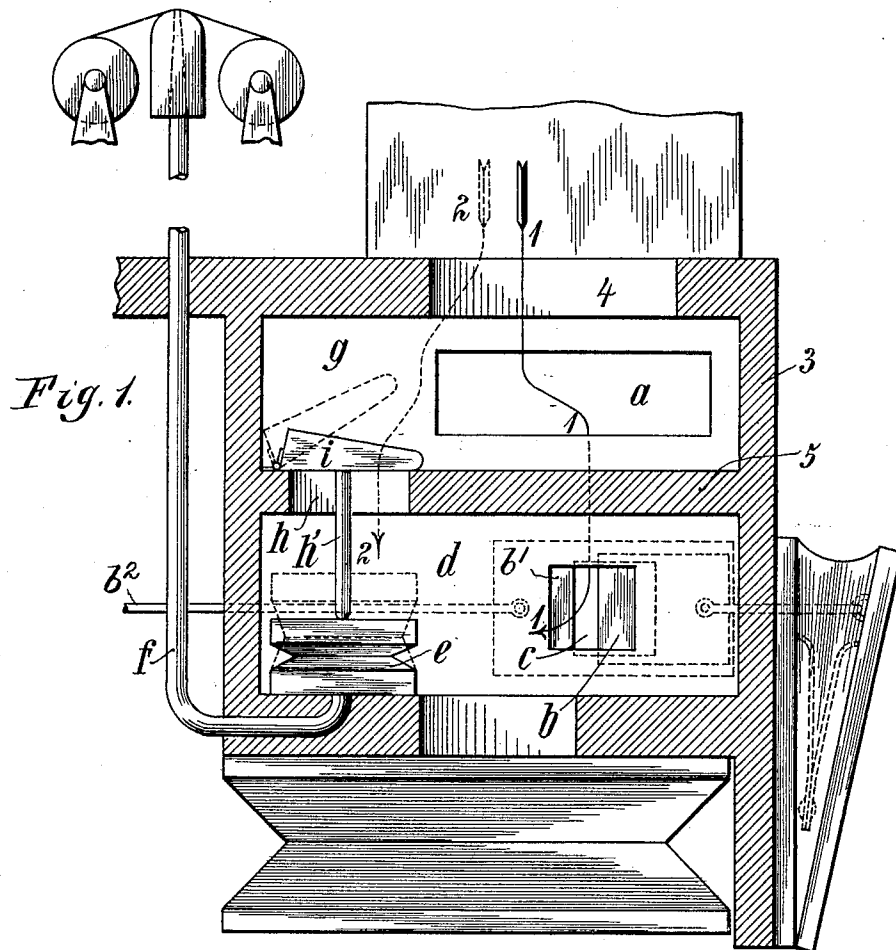


R. FRÜMSDORF.
TONE MODULATOR FOR PNEUMATICALLY OPERATED MUSICAL INSTRUMENTS.
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1,000,594.

Patented Aug. 15, 1911.



Witnesses.

Jesse N. Lutton.

B. Kommer.

Inventor.

Robert Frömsdorf
by *Henry Orth*
Att'y.

UNITED STATES PATENT OFFICE.

ROBERT FRÖMSDORF, OF LEIPZIG-EUTRITZSCH, GERMANY, ASSIGNOR TO THE FIRM OF
LUDWIG HUPFELD AKTIENGESellschaft, OF LEIPZIG, GERMANY.

tone-modulator for pneumatically-operated musical instruments.

1,000,594.

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To all whom it may concern:

Be it known that I, ROBERT FRÖMSDORF, a subject of the King of Saxony, residing at Leipzig-Eutritzsch, Germany, have invented certain new and useful Improvements in Tone-Modulators for Pneumatically-Operated Musical Instruments; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

In pneumatically operated musical instruments controlled by a perforated note sheet, the tone generating device is connected to the wind chest and is actuated by varying the air tension or pressure therein by throttling the connection or opening for the air in a suitable manner. In mechanisms now constructed it is a difficult matter to modulate a single tone as in doing so all the tones of a row or several adjacent rows controlled by the note sheet will be suddenly altered in strength. The throttling mechanisms used for controlling the strength of tone are mostly controlled by the hand of the operator, are difficult to operate properly in connection with single tone, and the adjustment of such mechanism by the note sheet has heretofore been a difficult problem.

The present invention relates in general to throttling mechanisms for controlling the strength of tone by means of a single or double valve but not by the throttling mechanism used for other purposes. I do this by a suitable by-pass past the usual throttling mechanism whereby communication between the wind chest and reservoir is directly made so that the full air pressure can be directly used. Between the wind chest and reservoir or blower I therefore provide a by-pass which can be opened at the desired moment, either automatically or by hand. This by-pass is advantageously and preferably controlled from the note sheet, a hole in which admits atmospheric air to a hole or passage through the tracker or note board to a bellows or other inflatable device which by its inflation actuates the by-pass valve. However, the by-pass can be operated by hand actuated mechanism if desired.

In the drawings I have illustrated a tone-

modulator made in accordance with the present invention.

Figure 1 is a longitudinal vertical section and Fig. 2 is a vertical cross section of the casing.

It consists of a casing 3 having an opening 4 by means of which air enters from the wind chest into an upper chamber *g* separated from a lower chamber *d* by a partition 5. The chamber *d* is connected to the air reservoir or other device. The chambers *g* and *d* are connected to one another through the openings *a* and *c*, the latter being controlled by a pneumatically operated slide *b*, and a slide *b'* which is operated by hand through the medium of a controlling rod *b''*. The normal course of the air is indicated by the arrow 1, entering at 4 into the chamber *g*, from the chamber *g* through the opening *a* thence through the opening *c*, controlled by the throttle valve *b*, in chamber *d*, and from chamber *d*, to the reservoir. In the chamber *d* is located a small bellows *e* or other inflatable device as a membrane or the like. This bellows *e* is connected by a pipe *f* with an opening in the tracker board or note board. In the partition 5 is a by-pass opening *h* controlled by the by-pass valve *i*, having a depending pin *h'* that rests upon the bellows or other inflatable device.

Ordinarily during the playing the strength of tone is controlled by the valve *b* and the course of the air is as indicated by the arrow 1. Should the requirements of the music necessitate an increase in the strength of tone, a hole in the note sheet admits atmospheric air to the hole in the tracker board and pipe *f* whereby the bellows is inflated, the pin *h'* lifted and the valve *i* opened, thereby admitting air to the reservoir through the by-pass *h* in the partition 5, as indicated by the dotted arrow 2, to establish direct communication between chambers *g* and *d*, in other words directly connecting the wind chest and reservoir so that the air can act with full strength upon the desired tone generator. The valve *i* can also be actuated by hand by any suitable mechanism if it is so desired to construct the device.

I claim:

1. In a pneumatically operated musical instrument, a tone modulator comprising two chambers communicating respectively

with the wind chest and the air reservoir, note sheet controlled mechanism, hand operated mechanism and automatic mechanism between the two chambers to regulate the
5 tension in one of the chambers, all of said mechanism operable both independently and simultaneously.

2. In a pneumatically operated musical instrument, a tone modulator comprising an
10 upper chamber and a lower chamber communicating respectively with the wind chest and the air reservoir, a bellows, a slide connected with the movable part of the bellows to partly close a port connecting said cham-
15 bers, a hand operated slide cooperating with the aforesaid slide, a by-pass valve opening into the upper chamber, an inflatable bellows mounted in the lower chamber, a tracker board, a conduit directly connecting the lat-
20 ter and inflatable bellows, and a pin on the valve resting on the bellows to lift the valve from its seat.

3. In a pneumatically operated musical instrument, a tone modulator comprising an
25 upper chamber and a lower chamber having

a port between them, and communicating respectively with the wind chest and the air reservoir, a bellows operated by variation of pressure in the reservoir, a slide connected to the movable part of the bellows to control
30 the port in accordance with the pressure in the reservoir, a hand operated slide cooperating with the aforesaid slide and port to modulate the tone in accordance with the ideas of the operator, a by-pass valve be-
35 tween the two chambers and a bellows mounted in the lower chamber to actuate the valve, a tracker board, a conduit connecting the latter bellows and tracker board where-
40 by the by-pass valve may be actuated from the note sheet in accordance with definite modulations on the note sheet.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

ROBERT FRÖMSDORF.

Witnesses:

E. GENDFUER,
RUDOLPH FRICKE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."