R. A. GALLY.

MUSICAL INSTRUMENT TEMPO CONTROLLER.

APPLICATION FILED SEPT. 9, 1912.

1,101,626. Patented June 30, 1914.

Fig. 1.

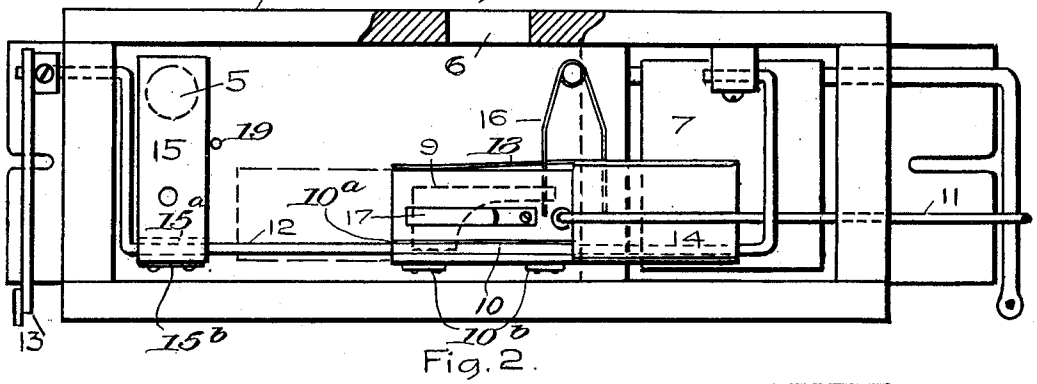


Fig. 2.

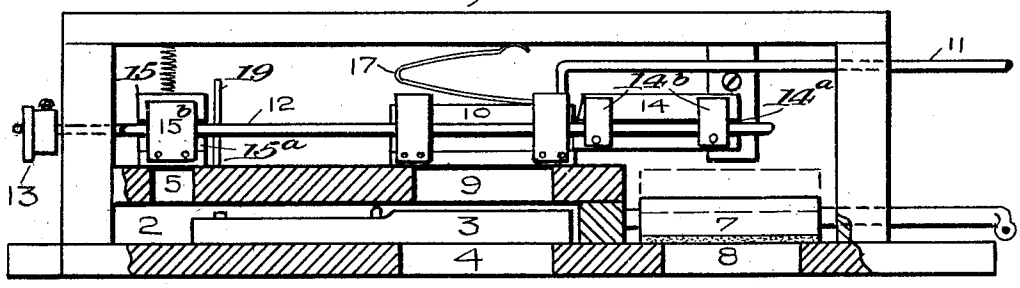


Fig. 3.

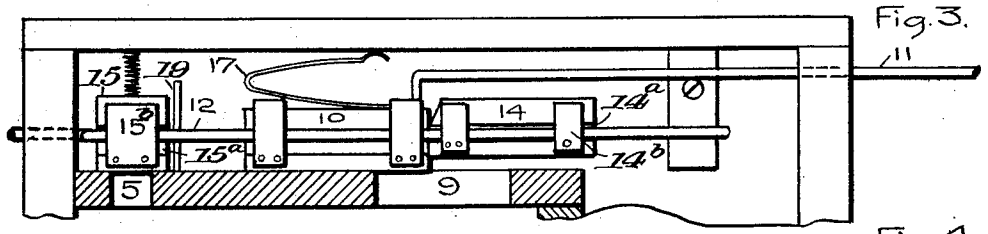


Fig. 4.

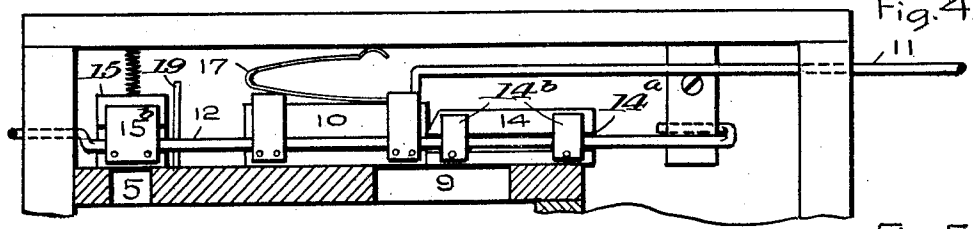


Fig. 5.

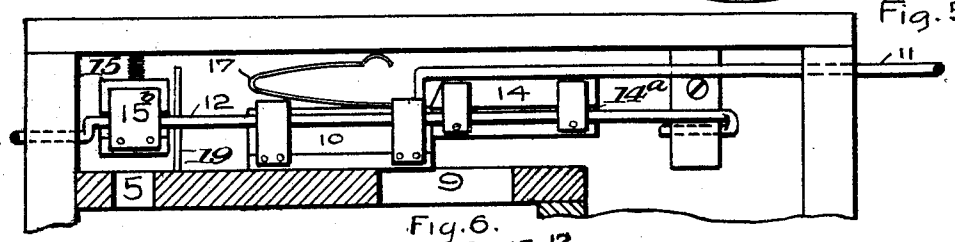
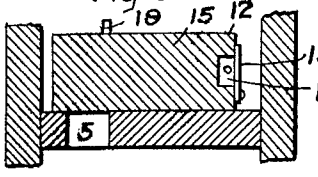


Fig. 6.



Witnesses:
Charles F. Kopp.
J. W. Macy.

Inventor:
Robt. A. Gally.

UNITED STATES PATENT OFFICE.

ROBERT A. GALLY, OF CINCINNATI, OHIO, ASSIGNOR TO THE BALDWIN COMPANY, OF CINCINNATI, OHIO.

MUSICAL-INSTRUMENT TEMPO-CONTROLLER.

1,101,626. Specification of Letters Patent. Patented June 30, 1914.

Application filed September 9, 1912. Serial No. 719,311.

To all whom it may concern:

Be it known that I, ROBERT A. GALLY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton, State of Ohio, have invented a certain new and useful Improvement in Musical-Instrument Tempo-Controllers, of which the following is a specification.

Former devices for two manual controls of the tempo controlling means of a self-playing musical instrument have been of two types, each with the main control varying the quantity of air for the different speeds of motor, the secondary control of one type being effected by varying the tension of the air service to the tempo port, the other type effecting the secondary control by modifying the quantity of air served to the motor.

The present invention relates to the second type, quantity control by both primary and secondary control means, the tension of the air service to the tempo port not being affected, all this being effected by simplified and improved means as now set forth.

In the drawings Figure 1 is a plan view of a tempo-box with its top removed to show the valves; Figs. 2, 3, 4, and 5 are front views with the front cover removed to show the valves in their various positions for the several different ways of speed control; and Fig. 6 a sectional view of accelerator valve from left end of box.

The tempo box 1 shows a governor chamber 2 having a governor valve 3 for effecting an even tension air supply to the tempo ports 4 and 5.

The governor pneumatic and spring and other customary parts of a tension governing device are not shown, but are understood to be provided in any suitable manner, and might be at a distant point, and so also might the governor valve and chamber. The present invention relates to the quantity control of air for determining the speed of a wind motor which propels the music spools and sheet of a self-playing musical instrument, which motor may be connected by conducting means attached to port 6 of the box 1. The particular position of the governor valve and chamber, in the reroll valve 7, and the general shape of the box 1 are shown and claimed in my separate application No. 718,853.

The ports 4 and 8 are understood to be connected to the air tension producing means, which is usually of varying tension. If of even tension, the connection might be direct from such air tension producing means to the tempo port 9.

A tempo valve 10 has its position above tempo port 9, and is movable from its closed position over said port as in Figs. 1 and 2, to an open position as in Figs. 3, 4 and 5. Such motion is effected by a valve wire 11 suitably connected to any manual control means.

A rocker 12 is connected by an arm 13 to any suitable manual control means adapted for effecting a secondary or modifying control of tempo. To this rocker 12 are connected a trailer valve 14 and an accelerator valve 15, and the tempo valve 10 may also be guided thereby. The guidance of the tempo-valve 10 on rocker 12 is here shown as by the valve 10 having a recess or groove 10^a lengthwise thereof, the front of said recess being closed by guards or clips 10^b. This groove 10^a is of sufficient height to permit the rise of rocker 12 when lifting accelerator valve 15, and at the same time retain the valve 10 in guidance on said rocker 12, the bottom of said groove 10^a being sufficiently below the rocker 12 at normal position to allow the depression of the rocker when lowering trailer valve 14. The trailer valve 14 is guided on rocker 12 by a groove 14^a in the front of the valve 14, the front of the groove being closed by guards or clips 14^b, and the height of the groove neatly fitting rocker 12 so that the trailer valve 14 will always travel with said rocker 12. The trailer-valve 14 is normally above the seat in which is the tempo port 9, as in Figs. 2 and 3, and is held against the rear end of the tempo valve 10 by means of a spring 16 engaging both valves and pulling them together yet allowing an up and down motion of the trailer valve 14 by operation of the rocker 12 without disturbing the seating of the tempo valve, 10, which is aided to its seat by a spring 17. When the valve 10 is moved by wire 11 and its manual control so as to open tempo port 9 as in

Fig. 3, the downward operation of the rocker 12 by arm 13 and its manual control as in Fig. 4, will partly or wholly close whatever of tempo port 9 has been opened by tempo valve 10 and its controlling connections, thus slowing or entirely stopping the motor from the speed set by the manual control of tempo valve 10.

The accelerator-valve 15 is guided at its front on rocker 12 by a groove 15^a in the front of valve 15, the front of the groove 15^a being closed by a guard or clip 15^b, the top of said groove 15^a being closely adjacent rocker 12 when latter is in normal position, and the bottom of said groove 15^a being sufficiently below said rocker 12 when in normal position to allow the depression of the rocker when lowering trailer-valve 14. The one side of the trailer-valve 15 is guided against the arm of the rocker 12 at left of said valve 15, and at the other side of said valve 15 by a guide-pin 19 driven into a solid part of the box. The accelerator valve 15 lies normally closed over the accelerator port 5, but an upward operation of rocker 12 by arm 13 and its manual control will raise this accelerator valve 15 and allow air to flow through its port 5 to actuate the motor, either by port 5 alone if tempo valve 10 is closed over port 9, or to increase the motor speed set by the tempo valve 10 if that is already open. In the latter case, the raising of the trailer valve 14 above its normal distance above port 9 will free that port 9 of some of the air friction caused by its position over that port 9, and by that means also add to the speed of the motor.

The accelerator port 5 is placed well to the rear of the accelerator valve 15, so that the raising of its front end by rocker 12 is greatly reduced in its amount of motion over port 5, thus enabling a very gradual and accurate control of the speed increase by this means.

To prevent accidental straining or displacement of the spring 16 should the operator move the tempo-wire 11 and tempo-valve 10 in the direction away from the trailer-valve 14 while pressing down rocker 12 and trailer-valve 14, a safety strap 18 is attached to both valves 10 and 14, with sufficient distance between the attaching points to allow the free raising and lowering of trailer-valve 14. For economy of space, the trailer-valve 14 is allowed to travel partly beyond the seat over which it travels, and over the re-roll valve 7, with space enough between the two valves 14 and 7 to allow the raising of valve 7 without interfering with valve 14.

I do not broadly claim a secondary air-control of the tempo of a motor propulsion of a music-sheet, such being very old in the patent to M. Gally, #346,152, July 27, 1886; nor do I broadly claim a secondary control by quantity, that being a feature of said M. Gally patent; nor do I claim or limit myself to the combination of my devices with a tension governor, as a tension governor is also equally old in this art, being included and claimed in a division of said M. Gally patent, dated Oct. 19, 1886, and numbered 351,172; nor do I limit myself to the use of my invention with a tension governor, or without a tension governor, both manners of using music-sheet motors being old, and either manner of air-service being adaptable to my device according to the particular related conditions of the general structure with which it is used; also:

Various modifications may be made and yet be subject to what I claim as my invention.

Claims:

1. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, an extra accelerator port and normally closed accelerator valve thereto, a rocker means engaging said accelerator valve, and means to move said rocker and raise said accelerator valve, the tempo-valve being guided on said rocker.

2. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, an extra accelerator port and normally closed accelerator valve thereto, a rocker means engaging said accelerator valve, and means to move said rocker and raise said accelerator valve, the rocker engaging said accelerator valve near its one end and the accelerator port positioned underneath the other end of said accelerator valve.

3. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, an extra accelerator port and normally closed accelerator valve thereto, a rocker means engaging said accelerator valve, and means to move said rocker and raise said accelerator valve, and a trailer-valve contiguous to and traveling with said tempo valve and over said tempo port and means for holding said valves together, said trailer-valve engaging with said rocker, and depressible with said rocker.

4. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, an extra accelerator port and normally closed accelerator valve thereto, a rocker means engaging said accelerator valve, and means to move said rocker and raise said accelerator valve, and a trailer-

valve contiguous to and traveling with said tempo valve and over said tempo port and means for holding said valves together, said trailer-valve engaging with said rocker, and depressible with said rocker, the tempo valve being also guided on said rocker.

5. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, an extra accelerator port and normally closed accelerator valve thereto, a trailer-valve contiguous to and traveling with said tempo-valve and over said port, means for holding said two valves together, and a common means engaging both said accelerator valve and said trailer-valve and adapted to actuate both.

6. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, an extra accelerator port and normally closed accelerator valve thereto, a rocker means engaging said accelerator valve, and means to move said rocker and raise said accelerator valve, and a trailer-valve contiguous to and traveling with said tempo valve and over said tempo port and means for holding said valves together, said trailer-valve engaging with said rocker, and depressible with said rocker, the tempo valve being also guided on said rocker, each said valve having a groove in which said rocker so engages, the groove in the trailer-valve being a close fit to said rocker, and the grooves of the tempo valve and the accelerator valve being greater in size than said rocker, such excess being at two opposite sides of said rocker in said tempo valve and at one side of said rocker means in said accelerator valves respectively, when said rocker is in normal position.

7. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, an extra accelerator port and normally closed accelerator valve thereto, a rocker means engaging said accelerator valve, and means to move said rocker and raise said accelerator valve, and a trailer-valve contiguous to and traveling with said tempo valve and over said tempo port and means for holding said valves together, said trailer-valve engaging with said rocker, and depressible with said rocker, the tempo valve being also guided on said rocker, the trailer-valve and accelerator valve each having a groove in which said rocker so engages, the groove in the trailer-valve being a close fit to the rocker, and the groove in the accelerator valve having an excess clearance from the rocker in that part of said valve between said rocker and the seating face of said accelerator valve, when said rocker is in normal position.

8. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, an extra accelerator port and normally closed accelerator valve thereto, a trailer-valve contiguous to and traveling with said tempo-valve and over said port, means for holding said two valves together, and a common means engaging both said accelerator valve and said trailer-valve and adapted to actuate both, each said valve having a groove in which said means so engages, the groove in the trailer-valve being a close fit to said means, and the grooves of the tempo valve and the accelerator valve being greater in size than said means, such excess being at two opposite sides of said means in said tempo valve and at one side of said means in said accelerator valve when said rocker is in normal position.

9. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, an extra accelerator port and normally closed accelerator valve thereto, a trailer-valve contiguous to and traveling with said tempo-valve and over said port, means for holding said two valves together, and a common means engaging both said accelerator valve and said trailer-valve and adapted to actuate both, the trailer valve and accelerator valve each having a groove in which said means so engages, the grooves in the trailer valve being a close fit to the means, and the groove in the accelerator valve having an excess clearance from the means in that part of said valve between said means and the seating face of said accelerator valve, when said rocker is in normal position.

10. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, a trailer-valve contiguous to and traveling with said tempo valve and over said port, flexible means for holding the two said valves together during said travel, and a safety means engaging both said valves and having less yield than said flexible means.

11. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, an extra accelerator port and normally closed accelerator valve thereto, a trailer-valve contiguous to and traveling with said tempo-valve and over said port, means for holding said two valves together, and a common means engaging both said accelerator valve and said trailer-valve and

adapted to actuate both, each said valve having a groove in which said means so engages, the groove in the trailer-valve being a close fit to said means, and the grooves of the tempo valve and the accelerator valve being greater in size than said means, the groove in the tempo valve being greater in size than the groove in the accelerator valve.

12. In a music self-player tempo device: a tempo-port, a tempo-valve adapted to travel over said port, a tempo-control means to said tempo-valve adapted to effect said travel, an extra accelerator port and normally closed accelerator valve thereto, and a common means engaging both said accelerator-valve and tempo-valve, and adapted to actuate said accelerator valve, each said valve having groove in which said means engages, the groove in said tempo-valve being greater in size than in said accelerator valve.

ROBT. A. GALLY.

Witnesses:
J. W. MACY,
WM. EVERS.