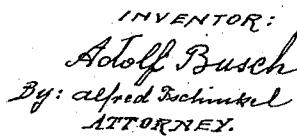


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2 SHEETS--SHEET 1.

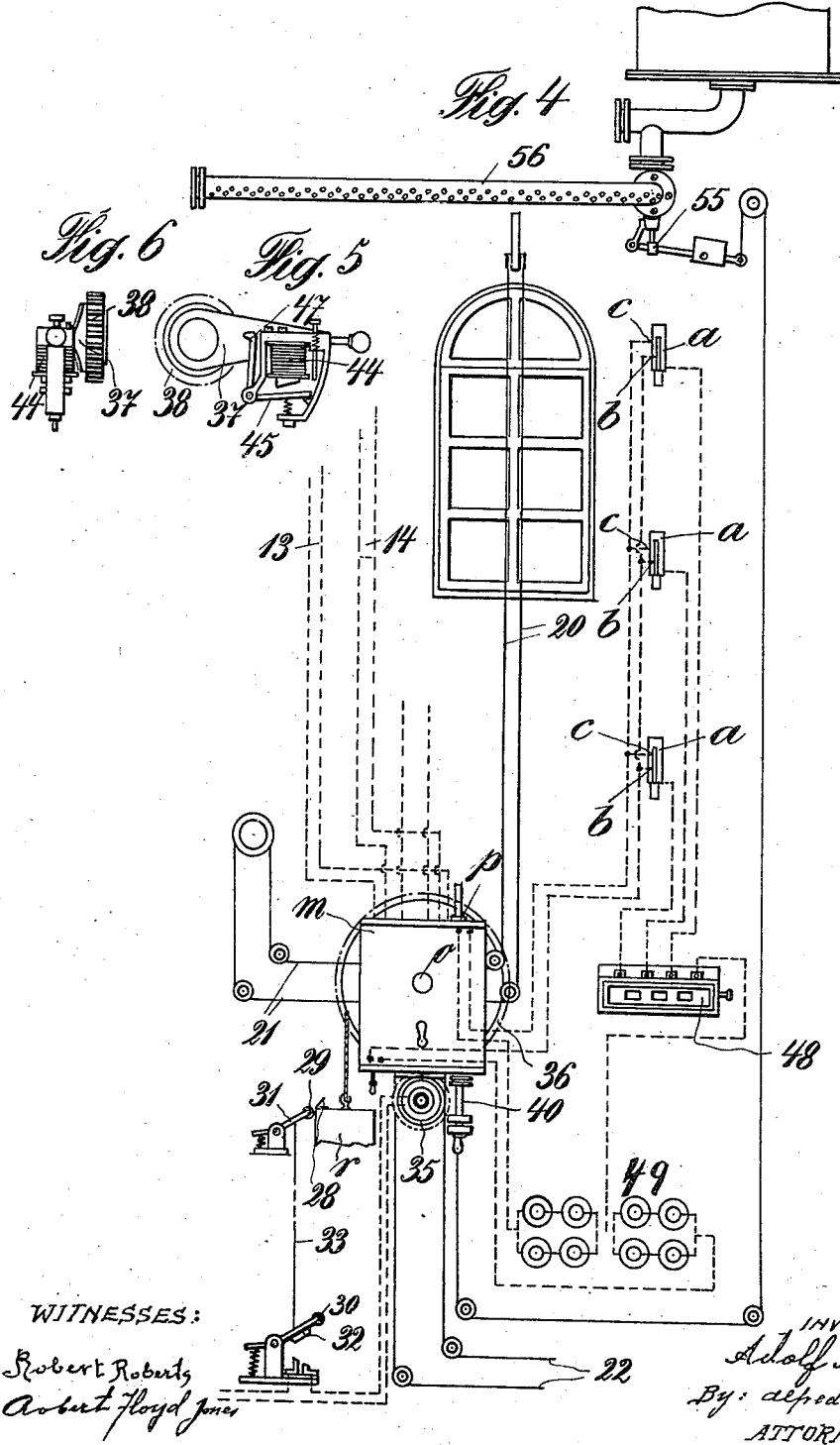


A. BUSCH.
FIRE PROTECTING AND SIGNALING APPARATUS.
APPLICATION FILED OCT. 27, 1909.

987,669.

Patented Mar. 21, 1911.

2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

ADOLF BUSCH, OF RIGA, RUSSIA.

FIRE PROTECTING AND SIGNALING APPARATUS.

987,669.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed October 27, 1909. Serial No. 524,818.

To all whom it may concern:

Be it known that I, ADOLF BUSCH, a subject of the Emperor of Russia, and resident of Riga, Russia, have invented new and useful Improvements in Fire Protecting and Signaling Apparatus, of which the following is a specification.

The present invention relates to a device for fire protecting and signaling which is started by electromagnets communicating with thermostats.

My device has the object of automatically signaling the outbreak of a fire to different places.

Preferably my device is used in theaters, warehouses or the like.

My invention is illustrated on the accompanying drawings.

Figures 1, 2, and 3 show three elevations, and Fig. 4 shows diagrammatically the arrangement of my device at a stage. Figs. 5 and 6 are details.

With reference to the drawings, within a casing *m* there are journaled two shafts *o* and *o*¹ connected by a cone couple 50. To the shaft *o* are mounted, chain wheels 18, by means of a suitable friction couple. By these wheels are actuated chains 20, 21, 22, or the like, which effect the opening of windows, the shut off of the curtain and of the stage doors. Further to the shaft *o* there is fastened a cogwheel 23 meshing with the cog-wheel 24 to which the winding shaft 25 and the crank 26 are attached. Further at one end of the shaft *o*¹ is the rope-wheel *p* with the rope *n* and the counter-weight *r*. Suitably supported in vertical alinement are the brackets bearing the pivoted levers 31 and 32, the latter being the lower and having a switch member adapted to co-act with a member on the base of its bracket to close the circuit of the motor 34 when depressed, the lever 32 being provided on its end with an anti-friction roller 30 lying in the path of the weight *r* and being contacted with and depressed by said weight as the cable *n* unwinds, upon the closing of the switch the motor being started to rewind the cable. To shut off the motor when the weight has been sufficiently raised, I provide the lever 31 with an anti-friction roller 29 adapted to be contacted with by the incline 28 on the top of the weight *r* and raised thereby, a rope connecting the levers 31 and 32 to cause the lever 32 to be raised with 31 and thus break the circuit of the motor, when the weight

will descend and unwind the cable until it again closes the switch of the motor circuit. At the shaft *o*¹ further is the cogged wheel *s* which, by the cogged wheel *t* and the conical wheels 1 and 2 actuates the governor. By the latter, in well known manner, is influenced by a lever 4 a brake 5 with the brake disk 6 for the purpose of regulating the speed of the clock-work. At the side 7 of the brake-disk 6 are arranged a number of interrupted lamellæ *s* of several traces whereon slide contact-pins 9 for giving a number of reports all at the same time. An inductor 10 serves for the production of reporting current. This inductor is driven by a band from the disk 7 mounted on the driven shaft 16, which shaft has a gear 17 secured thereon in mesh with and driven by the gear *s*. This latter is provided at one side with a cavity *v* which catches the pin *x* of the armature *y* of the electromagnet *z*. At the shaft *o*¹ there is further turnably arranged the arm 37 (Figs. 5 and 6) provided with a cog-wheel 38. With the latter meshes the rack 39. The latter has at its lower end the piston rod 40 the piston 41 of which playing within the cylinder 42. This latter is filled with a liquid for producing a brake resistance. A pipe 43 gradually conveys the fluid from one end of the piston cylinder to the other to cause said fluid to exert a constantly diminishing resistance.

To the piston-rod 40 is fastened the drawing means guiding to the valve of the fire device, in this case a sprinkler. At the arm 37 is arranged an electromagnet 44. Its armature 45, the second arm of which is formed as a pawl 47, catches the cog-wheel 54 which is rigidly attached to the shaft *o*¹ and so by the arm 37 couples the shaft *o*¹ with the rack.

With reference to Fig. 4 the thermostats of the guarded structure are each provided with two contacts *b* and *c*. The contact *b* is in the circuit of the electromagnet *z*. The contact *c* is in connection with the electromagnet 44. 48 is a switch-board for the thermostats.

The operation of my apparatus is as follows: If, in case of fire, the temperature within the room to be protected rises, at first the contact *b* of one of the thermostats is closed and the electromagnet *z* starts the clock-work. By the rotation of the chain-disks 18, the windows, doors, fans, and the like, of the burning building are opened or

closed respectively according to the necessity. Then by the friction couple 50 are disconnected now the lever 51 and the gear-transmission 52 and 53, and the shaft *c* is disconnected from the shaft *o*¹. Further by the contact-lamellæ 8 and the inductor 10 all necessary reports are made. By a further rising of the temperature the contacts *c* of the thermostats are closed, and the sprinkler 56 is actuated, and this is done in the following way. The armature 45 is attracted by the electromagnet 44, and the pawl 47 is thereby brought into meshing with the cog-wheel 54. The lever 37 is lifted by the rotation of the cog-wheel 54, and further by the cog-wheel 38 this movement is transported to the rack 39 and the piston-rod 40. Since the latter is in connection with the valve 55 of the raining pipe 56, the valve is opened, and the water flows through the raining or sprinkler pipe 56 to the fire place. In order to automatically close the valve 55 after the fire has been extinguished, by breaking the circuit of the electromagnet there takes place an unhooking of the ratchet 47 out of the cog-wheel 54. There the lever 37 drops with the rack 39 and the piston-rod 40, and so closes the valve 55. In order to keep the valve opened when the circuit by the contacts *c* of the thermostats is closed there is provided a switch 57. When the circuit is closed by the contacts of the thermostats, the arm 37 is lifted, and cuts the electromagnet 44 out by the pin 58. Thereby the pawl 47 frees the cog-wheel and the arm 37 turns slowly downward till the pin 58 is again free and closes the circuit of the electromagnet, and this operation repeats as long as the contacts *c* of the thermostats keep the circuit closed. The supply of current to the electromagnet is effected by the rope 59 and the conductors 60 said current being supplied by the cells or batteries 49. The roller 61 only serves as a guidance of the rope 59.

Having now described my invention what I claim and desire to protect by Letters Patent is:

1. In fire protecting and signaling apparatus, the combination with a plurality of thermostats, of a switch board in communication therewith, clock work influenced by the thermostats, draft regulating means operated by the clockwork, a signaling disk having a number of contact lamellæ in different traces at the shaft of the clockwork, and a sprinkler also in communication with and controlled by the clock-work.

2. In a fire protecting and signaling apparatus the combination of, a number of thermostats, a switchboard in connection therewith, a clockwork, an electromagnet in connection with the thermostats for starting said clockwork, a number of apparatus at the shaft of the clockwork for operating draft regulating means, a winding means at the shaft, a regulator at said shaft, an inductor driven by the shaft of the clockwork, and a signaling disk moved by the clockwork provided with a number of contact-lamellæ of several traces, as and for the purpose specified.

3. In fire protecting and signaling apparatus, the combination with a plurality of thermostats, of an electro-magnet in communication therewith, a clock-work controlled by the magnet, a winder for the clockwork, an automatic cut-out for the winder when the clockwork is wound, a shaft driven by the clock-work, chain wheels frictionally held on the shaft, draft regulating means operated by said chain wheels, an inductor operated by the clockwork, a signaling disk on the shaft of the clockwork with a number of contact lamellæ of several traces, connections between the inductor and certain of the lamellæ, a sprinkler, a valve therefor, and connections between the clockwork and the valve for operating the latter.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

ADOLF BUSCH.

Witnesses:

EDMUND NEUGEBAUER,
S. W. GRÜNBERG.