G. W. MEYERS.

ELEVATOR DESPATCHER.

APPLICATION FILED OCT. 12, 1914.

1,156,610.

Patented Oct. 12, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

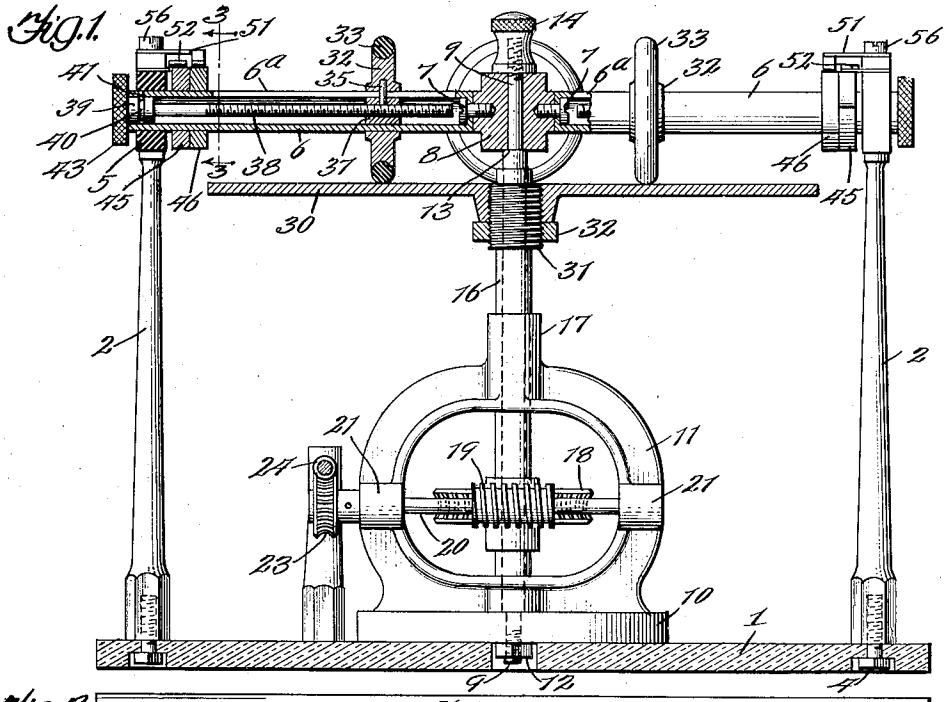
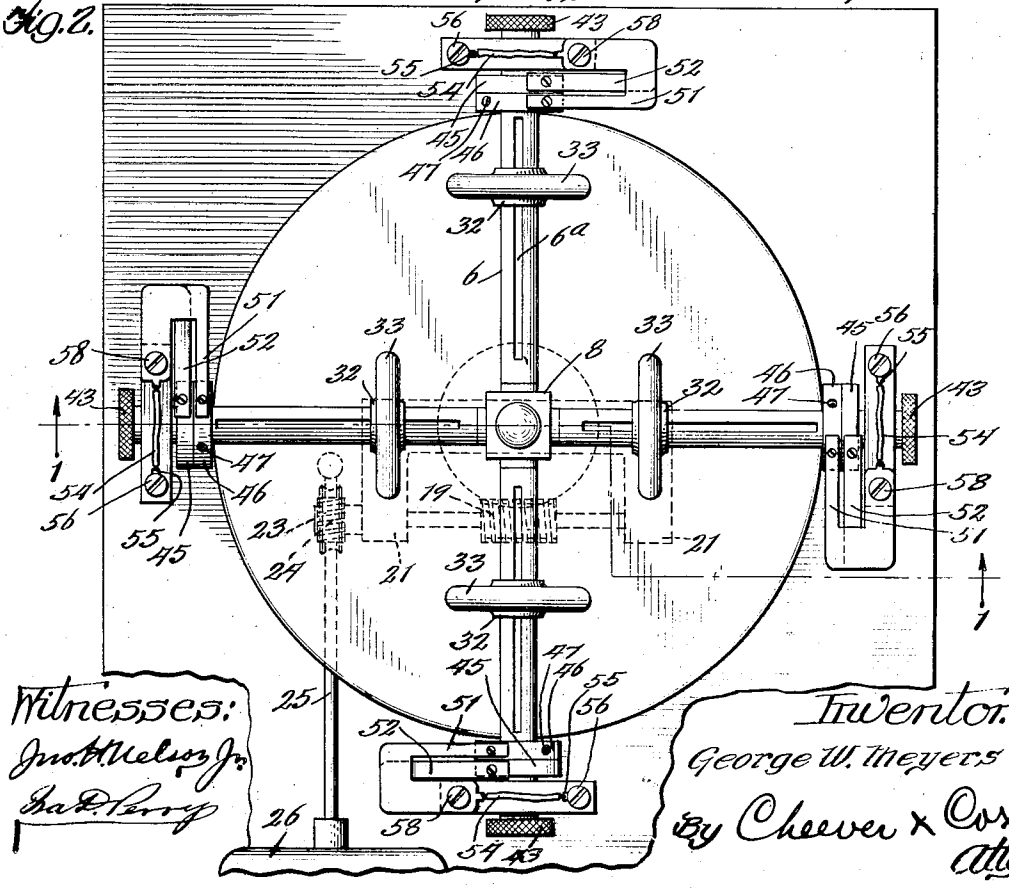


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

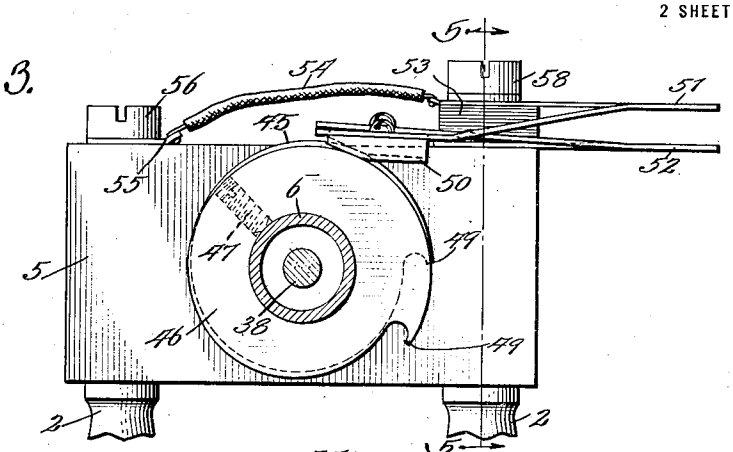
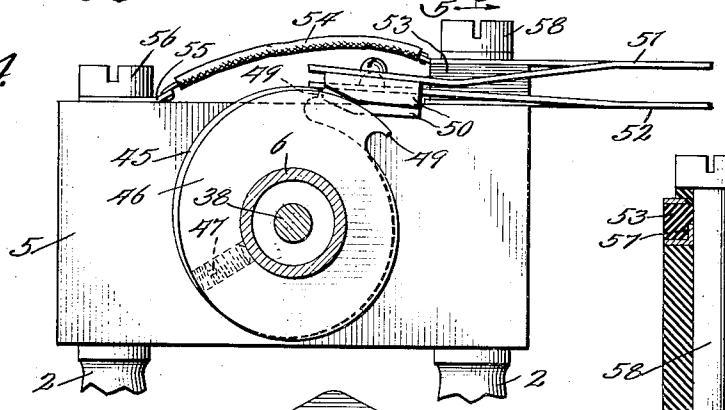


Fig. 4.



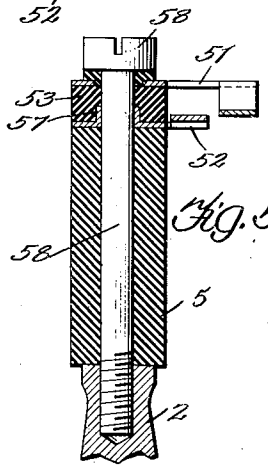


Fig. 5.

Fig. 6.

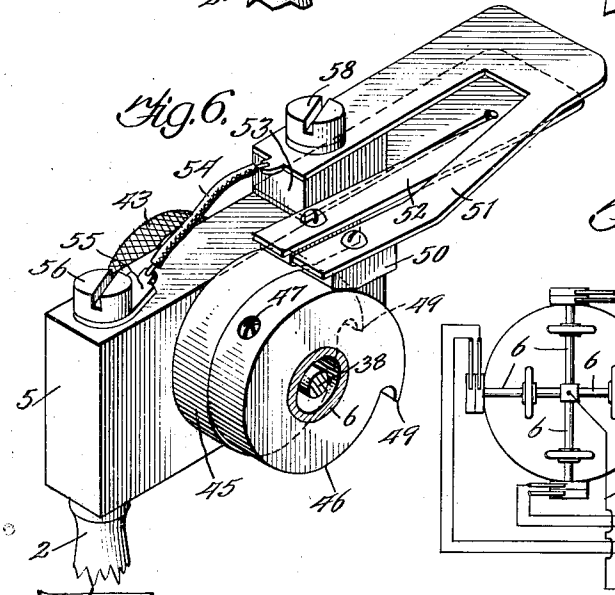
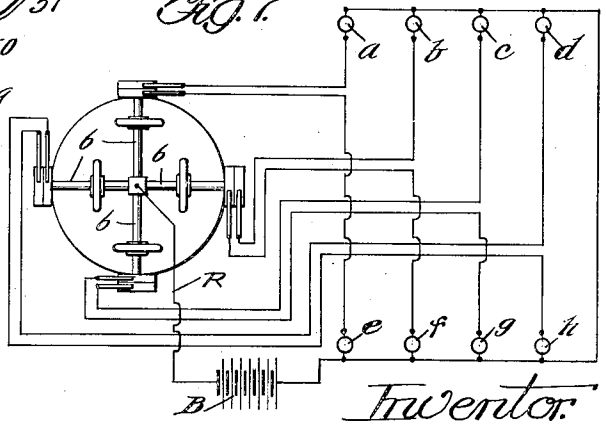


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE W. MEYERS, OF CHICAGO, ILLINOIS.

ELEVATOR-DESPATCHER.

1,156,610. Specification of Letters Patent. Patented Oct. 12, 1915.

Application filed October 12, 1914. Serial No. 866,199.

To all whom it may concern:

Be it known that I, GEORGE W. MEYERS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Elevator-Despatchers, of which the following is a specification.

My invention relates to elevator despatchers, by which I mean mechanism for automatically giving the signal to passenger elevators and the like for starting their trips, and the general object of my invention is to provide mechanism of this class which shall be not only completely automatic but so constructed that a single motor mechanism may control the signals for a number (for example 4) of elevators, the mechanism to be so flexible in adjustment that the different elevators may be run on schedules differing from each other and differing from themselves at different parts of the day. I also desire to render it possible for the individual elevators to spend a longer time on the going trip than on the return trip or vice versa. In other words, my purpose is to provide a device such that a single motor mechanism may be employed to give signals to a bank of elevators operating on independent and variable schedules and in certain parts of the day occupying more time or less time on the going trip than on the return trip. In carrying out this general purpose I have provided a control for each elevator, each control giving the signal for commencing the going trip and for commencing the return trip. I have also provided mechanism whereby the various parts are adjustable both for time, wear, etc., and have so designed the elements that they shall be few in number, simple in construction and certain in operation. These matters will be brought out more fully in the following description.

In the accompanying drawings in which similar numerals refer to similar parts throughout the several views, Figure 1 is a sectional elevation of the complete device taken on the line 1—1, Fig. 2. Fig. 2 is a plan of the device. Figs. 3 and 4 are views of the contact disks and associated mechanism showing the parts in different positions to thereby illustrate their principle of operation. The plane of section is indicated by the line 3—3, Fig. 1. Fig. 5 is a sectional detail on the line 5—5 Fig. 3. Fig. 6 is a perspective of the parts shown in Fig. 3 and Fig. 7 is a wiring diagram.

In the form selected to illustrate the invention a base 1 of insulating material is provided with four pairs of standards 2, 2 symmetrically placed and fastened by bolts 4 or otherwise. These standards are of metal and the screws 4 serve as binding posts, the result being that the standards are in circuit. A block 5 of insulating material is supported by each pair of standards as shown in detail in Figs. 3 and 4. A hollow shaft 6 is journaled preferably at the middle of each of said blocks 5, the inner end of said shaft being rotatably supported upon a stud 7 screwing into a head block 8 which fits over a non-rotary post 9. According to the present design post 9 is rigidly secured to the base 10 of the stationary frame 11 by a nut 12. At the upper end said post is provided with a shoulder 13 which supports block 8 and said block is held seated on said shoulder by a cap nut 14. A rotary sleeve 16 fits loosely over post 9 and is journaled in the boss 17 of frame 11. Said sleeve is driven by any suitable mechanism for example, the worm wheel 18 engaged by the worm 19 fastened to shaft 20. Shaft 20 is journaled in the brackets 21 on frame 11 and is driven by a worm wheel 23 engaged by a worm 24 which is driven by a shaft 25 receiving its power from a motor 26 or other suitable actuating device.

The rotary sleeve 16 supports and drives a friction disk 30 and, according to the construction illustrated, said friction disk is axially threaded at the center and screws onto a screw 31 fastened to and rotating with sleeve 16. A lock nut 32 holds the disk adjustably in place, the result being that when said sleeve is rotated the disk will also rotate and the disk may be vertically adjusted by first backing off the nut 32 and then screwing the disk up or down as may be desired.

The rotary movement of the friction driving disk 30 is transmitted to the shafts 6 by friction wheels 32 which are preferably provided with treads 33 of rubber or other substance which will increase the tractive effect of the disk on the wheels. Each friction wheel 32 is adjustable lengthwise of its shaft 6. In the form illustrated each friction wheel has an internal pin 35 which travels in a slot 6^a in the hollow shaft 6, said pin

also serving to fasten the wheel to a threaded block 37 located within the shaft. An adjusting screw 38 passes axially through block 37 and near its outer end is provided with a collar 39 which fits loosely within sleeve 6. Collar 39 receives the end of a pin 41 which is fastened to and extends inwardly a short distance from the side of shaft 6 as shown at the upper left portion of Fig. 1. The result is that screw 38 may rotate but may not move longitudinally within the hollow shaft. Said screw is rotated by means of a knurled head 43 located beyond the outer end of shaft 6. From the foregoing it will be evident that by rotating the knurled head 43 relative to shaft 6 the friction wheel 32 may be shifted closer to or farther from the axis of rotation of the driving disk 30.

Attached to each shaft 6 are two companion contact elements 45 and 46. These are of metal and are in electrical connection with the shaft. They are adjustably connected to the shaft by counter sunk set screws 47, best shown in Figs. 3, 4 and 6. In outline these contact disks assume the form of snail cams, each having at one point an undercut shoulder 49. Riding upon the periphery of each of these disks is a block 50 of insulating material screwed or otherwise fastened to the under side of a conductor terminal. One of these conductor terminals is marked 51 and the other 52, the terminal 51 being in circuit with one of the starting bells and the other in circuit with the other starting bell of the same elevator (it being understood that my apparatus is designed to give the elevator operator a signal both for starting the up trip and another for starting the down trip). The terminal 51 is supported upon a block 53 of insulating material mounted upon the main block 5 and connected by a conductor 54 and grip 55 to a screw 56 which passes down through block 5 and screws onto the metallic standard 2. The terminal 52 rests upon the block 5 beneath the block 53 and is provided preferably with a boss or sleeve 57 for making contact with the screw 58 as shown in detail in Fig. 5. Said screw 58 passes down through the insulating block 5 and screws into the standard 2 beneath, thus putting the terminal 51 into electrical contact with one of the standards. Screw 58 is suitably insulated from terminal 51; for example, in the manner shown in Fig. 5. The terminals 51 and 52 are of metal, and resilient, and tend to press the rider blocks 50 against the surface of the contact disks.

By reference to Figs. 3, 4 and 6 it will be apparent that the terminals 51 and 52 project slightly beyond the ends of the insulating riders 50. The result is that when the contact disks (rotating as they do in an anticlockwise direction) bring the ends of the shoulders 49 to the ends of the blocks 50, the projecting ends of the terminals drop down and make temporary electrical contact with the disks beneath. The projecting ends, however, are short, and so it is only a moment before said shoulders have rotated out of engagement and permitted the riders 50 to drop down onto the surfaces of the disks. In brief, the rotating disks make and break contact with their respective terminals 51 and 52, the engagement persisting only a short period of time, sufficient to energize the bell, buzzer, indicator lamp or whatever signal is provided for the information of the elevator operator.

Referring now to the electric connections, including the diagram of Fig. 7, let *a*, *b*, *c*, *d*, *e*, *f*, *g* and *h* represent the bells or other signaling elements. These are all connected in series to a battery B or other suitable source of electro-motive force. The remaining terminal of the battery is connected by a return conductor R which in the actual device is connected by the nut 12 or otherwise to the center post 9 and through said post to the different hollow shafts 6. Thus the edge of the contact disks 45 is in permanent electric connection with the battery. The remaining terminals of the signal elements *a*, *b*, *c*, *d*, *e*, *f*, *g* and *h* are connected by individual conductors to the terminals 51, 52 through the standards 2 in the manner hereinabove described. It is obvious therefore that the circuit through each signal element is normally broken but is temporarily established when the projecting end of the terminal engages the shoulder 51 of the respective contact disks.

In operation, when the motor 26 or other power device is started it will cause the driving disk 30 to rotate and this in turn will cause each of the friction wheels 32 to rotate. The speed of rotation of any individual wheel 32 will depend upon its distance from the axis of rotation of the driving disk. Thus a complete rotation of any driving wheel 32 may be accomplished in a short or a long period by simply adjusting the friction wheel longitudinally of its hollow shaft 6. It is evident that for each complete rotation of a friction wheel 32, two signals will be given to the operator of the elevator to which the particular shaft in question is assigned, this resulting from the fact that each hollow shaft is provided with two contact disks 45, 46, one for signaling to start the going trip and the other for signaling to start the return trip. Thus the period of rotation of any given shaft 6 determines the period for a round trip of the elevator which it controls and this period may be lengthened or shortened within any reasonable limits through the agency of the adjusting screw 38. But those skilled in the art are aware that frequently it occurs that the going trip may be longer or shorter than the

return trip, for example, in an office building in the rush hours in the morning when the employees are coming to work the up trip will take the longest time, there being few if any passengers for the down trip. In fact, in some buildings at such times some of the elevator operators will be instructed to make no stops on the down trip thus increasing the actual passenger carrying capacity of the bank of elevators as a whole. Of course, at quitting time in the evening the conditions will be reversed. My mechanism provides for all these conditions for not only can the duration of the round trip be increased or decreased by adjusting the position of the friction wheels 32 but the portions of the period assigned to the up trip and the down trip may be varied by varying the positions of the contact disks 45 and 46 angularly with respect to each other. If it is desired that the up trip and down trip shall be of equal length, the shoulders 49 will be adjusted to a position 180° apart; any variation from this may be produced by varying the angle between them.

In the design shown, the apparatus is capable of despatching four different elevators and all four are operated from a single motor mechanism. It is evident, however, that the capacity of the machine may be greatly increased without increasing the number of driving disks 30, it being necessary simply to provide additional friction wheels 32 and the parts operated thereby. In fact, an extensive bank of elevators may be completely controlled by apparatus constructed on my principle and an abundant range of adjustment is possible for each elevator not only as to the period for a round trip but the proportionate parts of that trip consumed respectively by the going and return trips. While this device is of special utility in connection with the despatching of elevators, its utility is not necessarily confined to such use, it being possible to employ the mechanism in many situations where periodic signals are required.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:

1. In a device of the class described, the combination with an electrically operated signal element and circuit means for energizing the same, of an element rotating at constant speed, a circuit breaker for controlling the signal element and transmitting mechanism operating said circuit breaker and operated by said constant speed element, said transmitting mechanism including a variable speed gear for the purpose described.

2. In a device of the class described, the combination with an electrically operated signal element and circuit means for energizing the same, of a disk rotating at constant speed, a circuit breaker for controlling the signal element, and transmitting mechanism operating said circuit breaker, said transmitting mechanism including a friction wheel driven by said disk and adjustable toward and from the axis of said disk and mechanical connections between said wheel and said circuit breaker.

3. In an elevator despatcher the combination of a disk rotating at constant speed, a friction wheel driven by said disk and adjustable toward and from the axis of rotation thereof, an electrically controlled signal element, and a circuit therefor, said circuit including a terminal and a rotary contacter coöperating therewith for making and breaking the circuit, said contacter being rotated by said friction wheel.

4. In an elevator despatcher, the combination of a signal element and its electric circuit, a stationary terminal in said circuit, a rotary contact also in circuit and adapted to engage said terminal, said contact approximating the outline of a snail cam with a shoulder at one point in its periphery, and an insulating rider normally holding the terminal out of engagement with said rotary contact, said terminal projecting beyond said rider to thereby momentarily engage the contact after the shoulder of the contact has rotated out from under the rider.

5. In an elevator despatcher, the combination of a signal element and its electric circuit, a rotating driving disk, a friction wheel driven by said disk, a hollow shaft on which said wheel is longitudinally slidable, a circuit breaker operated by said shaft, means connected to said wheel for driving said shaft and means for adjusting the position of said wheel lengthwise of said shaft to thereby vary the distance of the friction wheel from the axis of rotation of the disk.

6. In a signal giving device, a pair of electrically operated signaling elements, an electric circuit for each of them and two rotary circuit breakers, one for each of said circuits, said circuit breakers being angularly adjustable relatively to each other, a constant speed driving element, and variable speed transmitting mechanism for transmitting the rotary movement of the constant speed driving element to the circuit breakers at the various speeds required.

7. In combination, a pair of electrically operated signals, an electric circuit for each of them a rotary circuit breaker for each of said electric circuits, a shaft common to said circuit breakers for supporting and rotating them, a constant speed rotary driving element and variable speed connections between said driving element and said shaft.

8. In combination, a pair of electrically operated signals, an electric circuit for each

of them, a rotary circuit breaker for each of said circuits, a shaft whereon said circuit breakers are mounted, a constant speed driving disk, and a friction wheel contacting the surface of said disk, said wheel being slidable lengthwise of said shaft for varying the distance of said wheel from the axis of the shaft, said wheel being constructed to drive said shaft in all positions of said wheel.

9. An elevator despatcher comprising a pair of electrically operated signals, an electric circuit for each of them, a rotary circuit breaker for each of said circuits, a hollow shaft whereto said circuit breakers are secured, a constant speed driving disk, a friction wheel engaging said disk, said wheel being splined upon said shaft whereby the distance of the wheel from the axis of the disk may be varied, a block sliding within said shaft and connected to said wheel for shifting it along the shaft, and an adjusting screw screwing into said block and located chiefly within the shaft for varying the position of the block lengthwise of the shaft.

10. An elevator despatcher comprising a constant speed driving disk, a friction wheel engaging the face of said disk, a shaft parallel to the face of the disk, said wheel being splined upon the shaft, means carried by said shaft for adjusting the position of the wheel lengthwise thereof, a plurality of contact disks mounted on said shaft and rotating therewith, said disks being substantially in the form of snail cams with shoulders in their peripheral surfaces, an electric terminal for each of said disks, a rider block on each of said terminals normally holding the terminal out of engagement with the associated contact disk, said terminals projecting slightly beyond their rider blocks whereby there is momentary engagement between a terminal and its disk just after the shoulder of the disk has passed out from under the rider block, and an electrically operated signal in circuit with each of said terminals, one of said contact disks forming the remaining end of each circuit.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

GEORGE W. MEYERS.

Witnesses:

HOWARD M. COX,

M. S. ROSENZWEIG.