(No Model.) 2 Sheets—Sheet 1.

D. I. TOWERS.

THEATRICAL STAGE APPLIANCE.

No. 494,043. Patented Mar. 21, 1893.

Fig. 1.

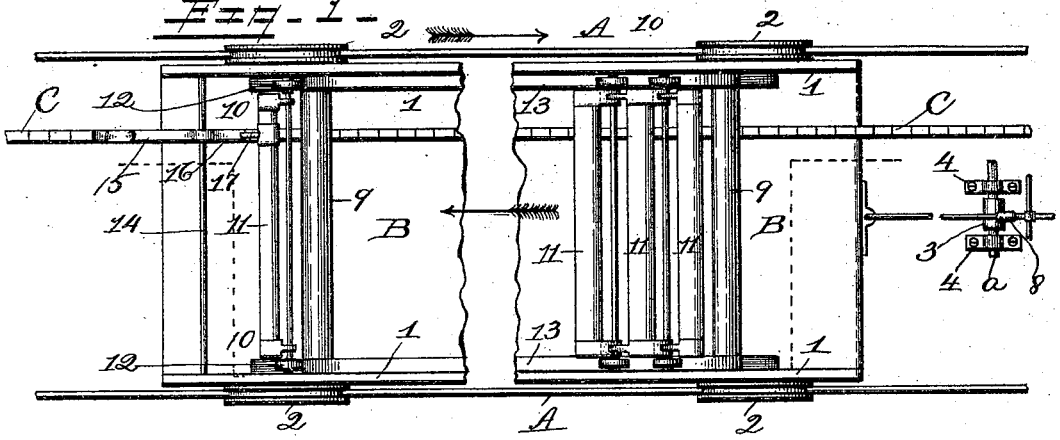


Fig. 2.

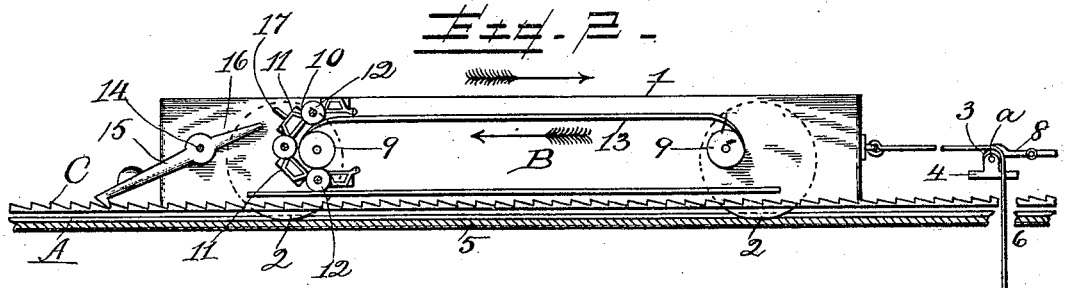
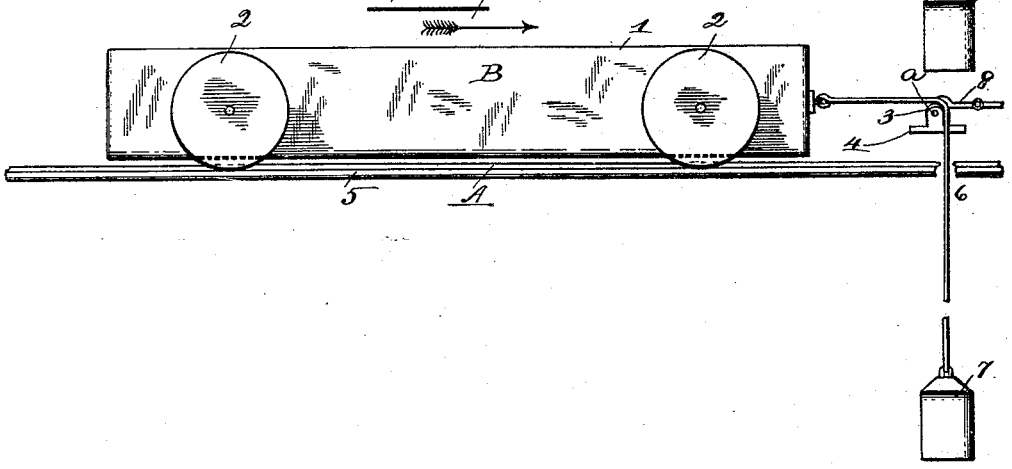


Fig. 3.



WITNESSES:

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F. O. McCleary.

INVENTOR

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BY

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(No Model.) 2 Sheets—Sheet 2.

D. I. TOWERS.

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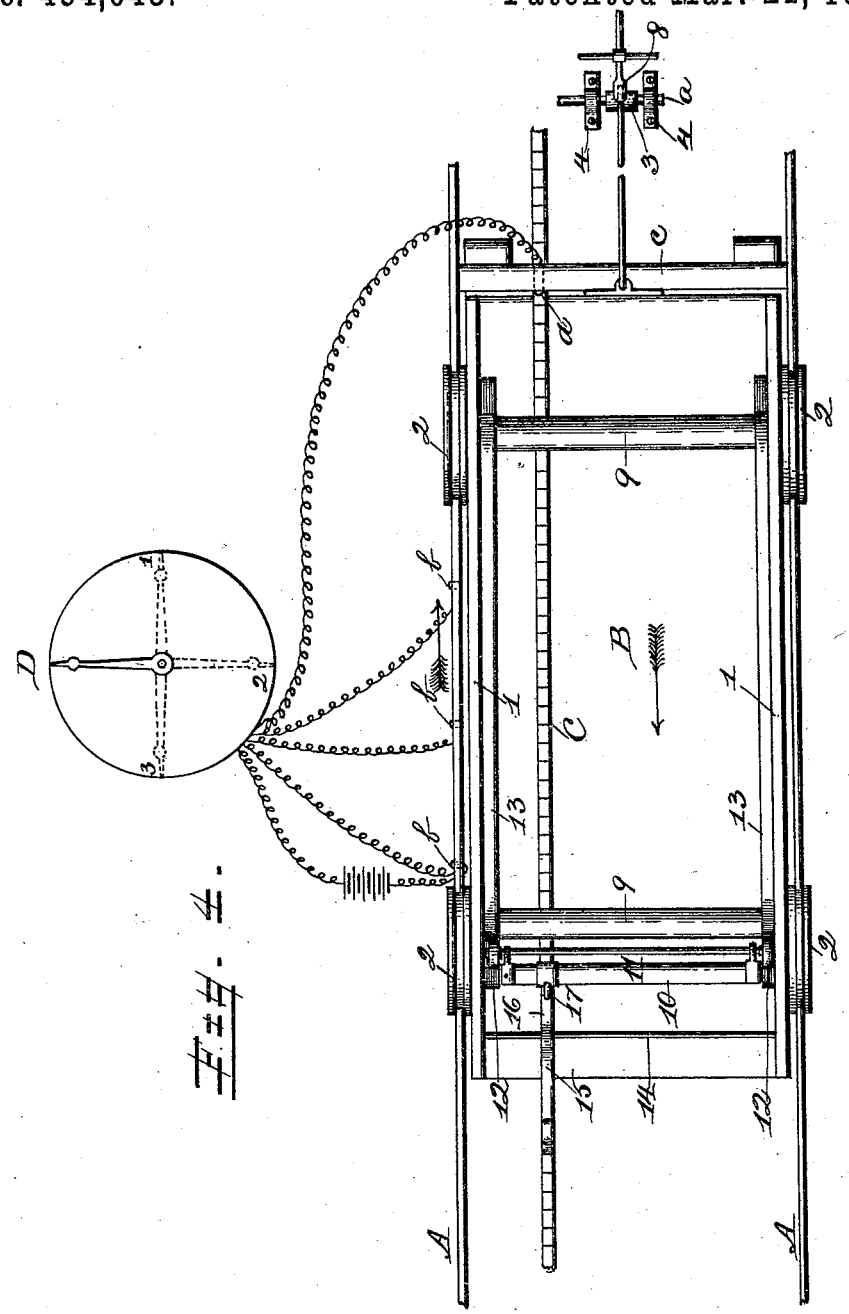

Fig. 4.

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UNITED STATES PATENT OFFICE.

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THEATRICAL STAGE APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 494,043, dated March 21, 1893.

Application filed February 5, 1891. Serial No. 380,276. (No model.)

To all whom it may concern:

Be it known that I, DAVID I. TOWERS, a citizen of the United States of America, residing at the city of New York, in the State of New York, have invented a new and useful Theatrical Stage Appliance, of which the following is a specification.

My invention has relation to theatrical stage appliances, of that character for producing illusory visionary effects, and especially relates to means and mechanism for indicating and measuring progressive movement of an endless apron or moving way mounted on a carriage operated by the action of an animate being, and means for holding the carriage in any position of advantage or disadvantage to which it may be moved.

My invention consists in the novel construction of parts and their combination, as will be hereinafter fully specified and particularly pointed out in the claims.

I am aware that it is not new to produce illusionary stage effects by the action of animate objects on traveling aprons or ways mounted on a carriage and restraining and limiting the position of the object by means of a rope and windlass, or similar mechanism.

My invention is designed to permit the carriage to be moved forward and to hold it at a definite, certain point of travel made or advantage gained, by the movement of the endless apron, and I believe I am the first to invent means for attaining this purpose.

I have fully and clearly illustrated my invention in the accompanying drawings, wherein,—

Figure 1 is a plan view of the carriage arranged on a track and my invention applied in connection therewith. Fig. 2 is a longitudinal section on the line *x*—*x* of Fig. 1. Fig. 3 is a side view of the carriage. Fig. 4 is a plan view of the track showing the push-buttons, the final stop or buffer-block, and the indicator.

A designates the rails of the track, on which the wheels of the carriage are supported and travel. These rails are arranged at such distance apart in parallel relation as may be requisite to take the wheels of the carriage and retain and direct them in movements. At determined distances in the rails of the track, as shown in Fig. 4 of the drawings, or at points on the sides thereof, arranged to be engaged by the wheels of the carriage, are push-buttons or pins, *b*. These are placed at such points in the line of the track as to accurately indicate a certain distance made or traveled by the endless apron of the carriage; as eighth or quarter mile points, and have connection with wires of an electric circuit connected to an indicator D, arranged in some convenient location for observation. At the front end of the track is a strong cross-piece *c*, serving as a stop or buffer-piece having arranged therein a push-button *d*, also having electric connection with a circuit leading to the indicator, and intended to announce through that element an alarm showing which carriage has reached the goal in advance. Thus it will be perceived that as the carriage progresses and reaches the respective push-buttons of the track the distance traveled will be announced or exhibited to the spectators; and that when the limit of progression has been reached the fact will be announced on the face of the indicator and by the ringing of an alarm, so that it will be known which apron has been propelled with the greatest speed and consequently which moving object has made the distance in the shortest time.

B designates the carriage, consisting of a substantial rectangular frame 1, carried upon wheels 2, formed to set on the rails, or other support. At the front end of the carriage is secured one end of a substantial cable or chain, carried over a sheave or pulley 3, mounted on a fixed shaft *a*, in suitably supported bearings 4, whence it depends below the platform, stage or floor, 5, as shown at 6, and has a weight 7, secured to the end which is of sufficient gravity to draw the carriage with the object thereon, forward when the restraining means are released either intermittently or otherwise. On the hub of the sheave 3 bears a brake 8, by which the sheave is locked or held against motion until it is desired to release it, to permit the weight to exert its force upon the carriage. In practice two or more of these carriages are generally arranged side-by-side adjacent to each other with an animate object on each, and it becomes necessary or desirable to start the series or number

of carriages as nearly simultaneous as possible, and for that purpose the shaft of the sheave 3, and that of the brake 8 can be extended as indicated, and supported, and supplied with brakes and sheaves for each carriage. I have not shown these additional apparatuses because it would be mere duplication of the single one shown in the drawings.

In the carriage B are supported the requisite number of rollers 9, about which is arranged an endless apron 10, provided with step-boards or slats 11, supported on small rollers 12 at each end; the rollers bearing on side-rails 13, fixed in the inner upper sides of the side pieces of the frame of the carriage. The operation of this mechanism under the action or power of a horse or similar moving body is well known.

On the bed of the track or supporting foundation of the carriage, is secured a ratchet-bar C, having the vertical faces of the ratchets reverse to the direction of the line of movement of the carriage; and on a support, as a bar 14, arranged across the rear end of the carriage is pivotally supported a pawl 15, the lower end of which is hooked to engage with the ratchets of the bar C, the engagement being effected by the gravity of that arm of the pawl. The upper portion of the pawl is extended, as at 16, and is periodically engaged by a lug or stud 17, fixed in one of the step-bars of the apron on the carriage, substantially as indicated in Figs. 1 and 2 of the drawings. This ratchet and pawl engagement holds the carriage against forward movement until the apron has traveled a complete revolution, when the lug strikes the end of the pawl and lifts it from engagement with the ratchet-bar, when the static force of the weight is made available and the carriage drawn forward one tooth of the ratchet, and then the pawl engages or lodges against the next tooth and the carriage remains stationary until another revolution of the apron is made, and the pawl again released, and so on until the moving force is stayed or stopped. It will thus be seen that when the length of the apron is known, that one revolution thereof will measure the length thereof, and that for every revolution a ratchet-tooth will be passed by the pawl, and the number of teeth thus passed to the rear of the pawl, will accurately indicate the number of revolutions of the apron, and consequently the distance traveled by the apron, may be easily determined by the simple multiplication of the number of teeth passed by the number of feet in the length of the apron; and if moved by an animate being the distance traveled by it will be the same.

I do not limit myself to the precise means for intermittently restraining or holding the carriage, as my invention broadly consists in a carriage having an endless apron and a restraining mechanism, intended to indicate a certain distance of movement of the apron.

The operation is as follows: It being premised that a horse is the object used to give motion to the mechanism on the carriage, and since, as stated, two or more of the machines are generally used upon the stage or other foundation, a horse is placed on each of the aprons, their forward movement being restrained by traces attached to the rear of the carriage, and the carriages being held in the same relative positions; the horses are then started, and when in full action the brakes on the sheaves are released. The action of the animal moves the apron, which traveling until the lug thereon strikes the pawl, which being released, the weight pulls the carriage forward one ratchet and is then stopped by the engagement of the pawl, which marks one revolution of the apron; and this movement being continued, and the intermittent progress of the carriage being effected, the animal on the machine which marks the greatest number of ratchets passed, will have traveled the greatest distance, and as his carriage will be correspondingly advanced his advanced position may be discerned by the spectators, and the distance then measured as heretofore specified.

Having thus described my invention, specified its construction, and explained its principle or mode of operation, I now proceed to particularly point out and distinctly claim the parts, improvements, and combinations.

I claim as my invention as follows:

1. The combination of a track, a carriage on the track, an endless apron on the carriage, a releasing mechanism on the carriage in position to be engaged by the endless apron and intermittently release and hold the carriage, on the track and means to move the carriage forward when released, substantially as described.

2. The combination of a track, a carriage on the track, an endless apron on the carriage, a ratchet bar secured on the bed of the track, and a pawl on the carriage to engage the ratchet bar and adapted to be released by the endless apron, substantially as described.

3. The combination with a track and a carriage thereon, of an endless apron on the carriage having a lug secured thereon, a fixed ratchet bar, and a pawl on the carriage arranged to engage the ratchet bar and to be released from such engagement by the lug on the endless apron, substantially as described and for the purpose specified.

4. The combination with a track, a carriage on the track, an endless apron on the carriage having a lug fixed therein, a fixed ratchet bar on the bed of the track, a pawl on the carriage to engage the ratchet bar and hold the carriage against movement and to be engaged and released by the lug on the endless apron, and a weight to move the carriage when the pawl is released, substantially as and for the purpose specified.

5. In combination with the track and the carriage arranged thereon, of push-buttons arranged in the track to be engaged by the

wheels of the carriage at determined distances apart, an electrically operated indicator adjacent to the track, and electric circuit connections between the push-buttons and the indicator, substantially as described.

6. In a theatrical stage appliance, the combination with a track, and a carriage on the track, of an abutting-piece arranged across the track at the limit of movement of the carriage, a push-button in the abutting-piece, an electrically operated indicator and alarm, substantially as described.

7. In a theatrical stage appliance, the combination with a track and a carriage on the track, of push-buttons in the path of the carriage arranged to be depressed by the carriage, a stop at the end of the track, a push-button in the stop, an electrically operated indicator and alarm, and electric circuit connections between the push-buttons and the indicator, substantially as described.

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

DAVID I. TOWERS.

Attest:
F. O. McCLEARY,
WM. H. BATES.