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G. C. BLICKENSDERFER.

CONVEYER APPARATUS.

No. 338,706. Patented Mar. 30, 1886.

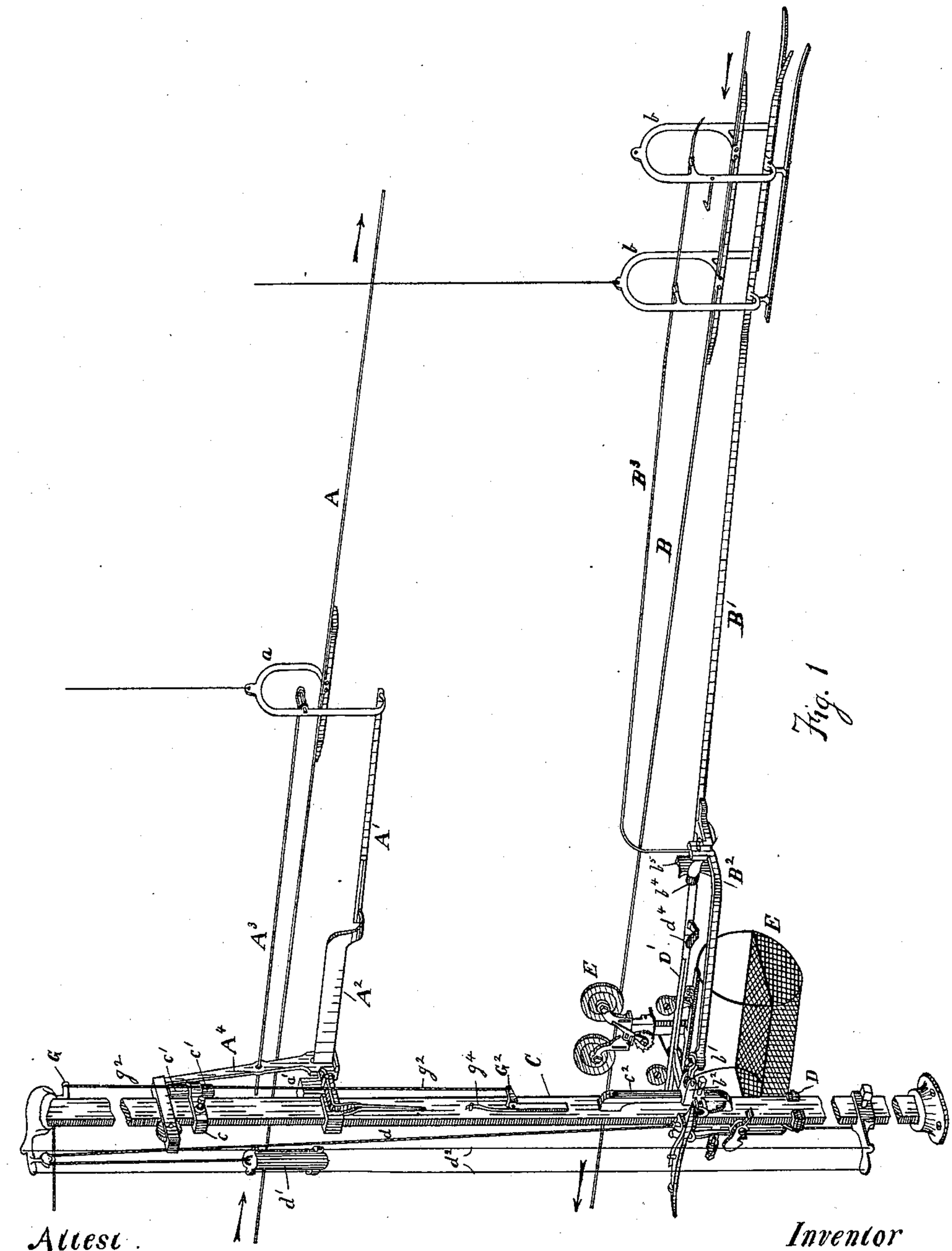

Fig. 1

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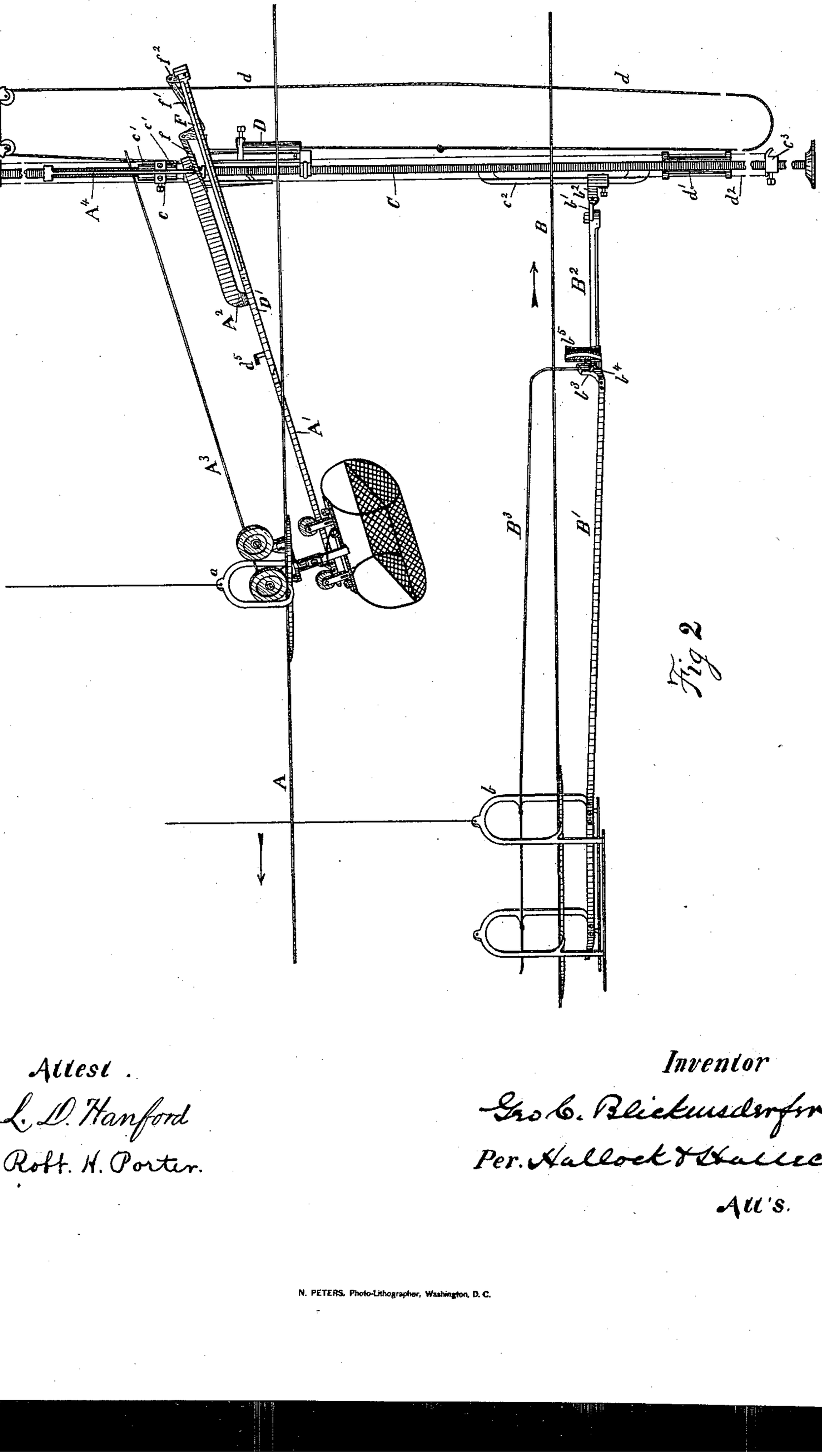

Fig 2

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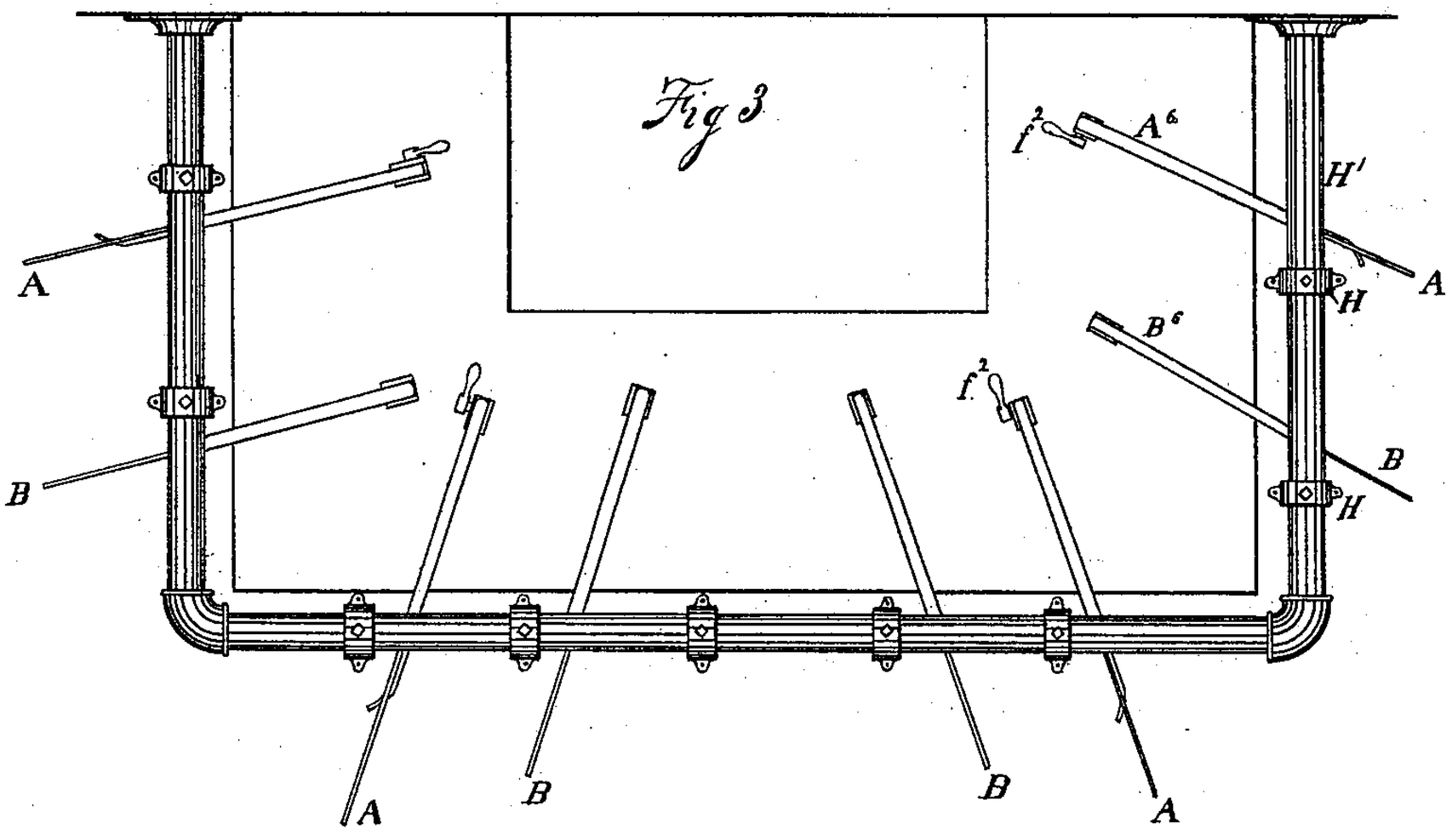
Fig 3



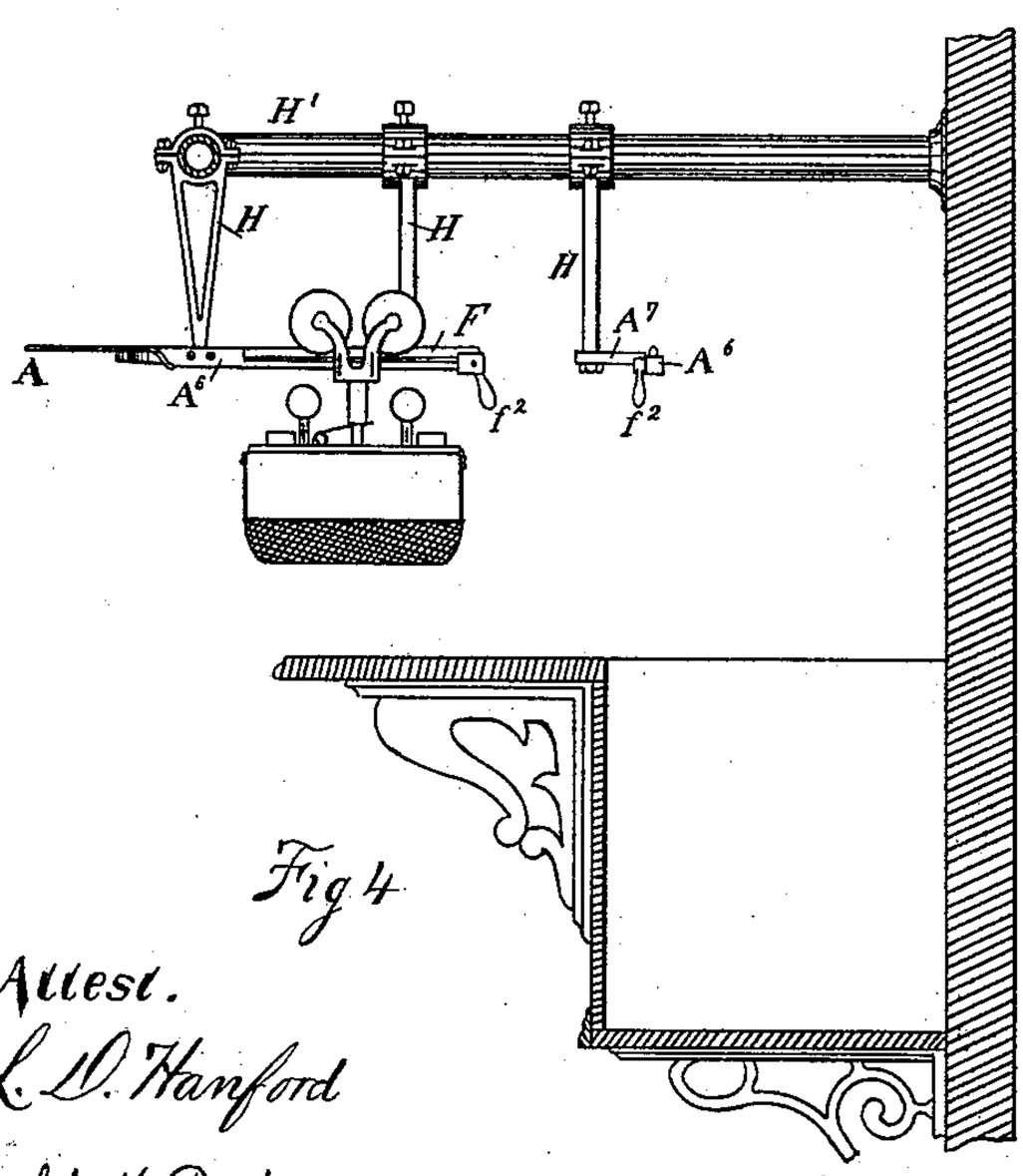


Fig 4

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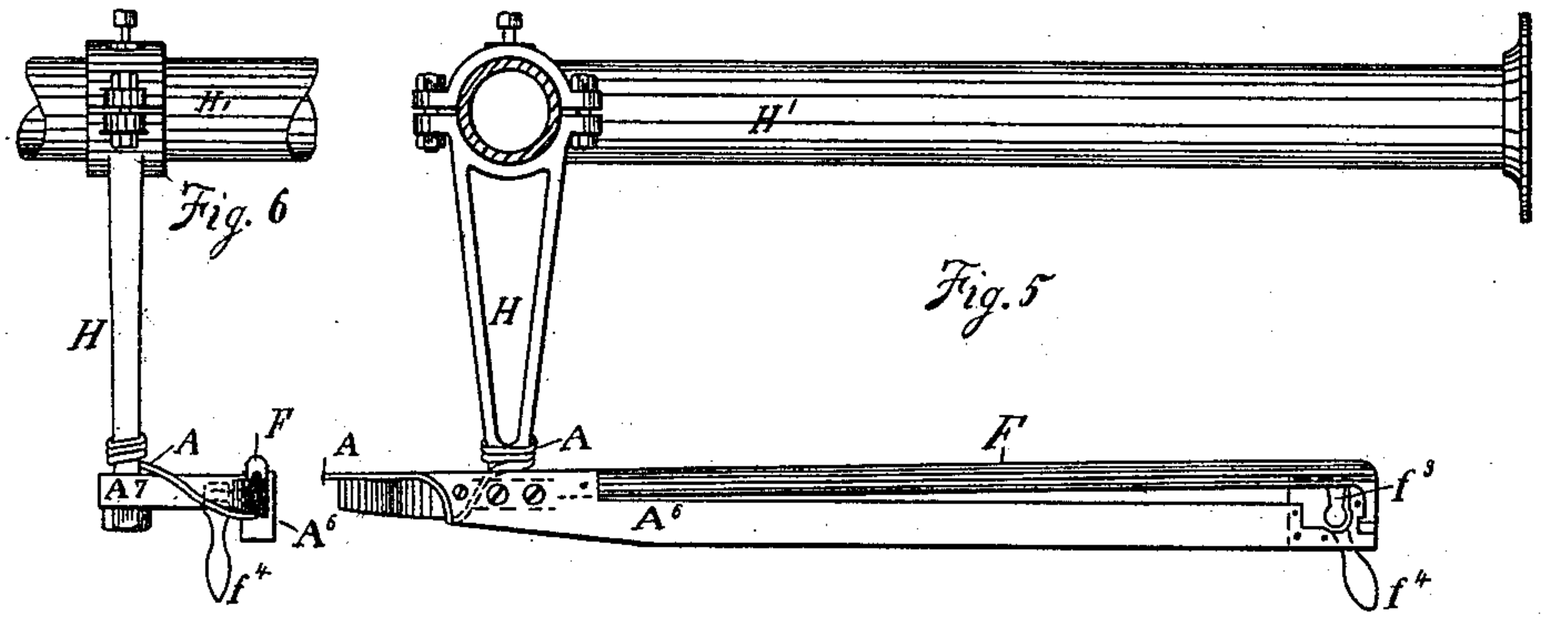

Fig. 6

Fig. 5

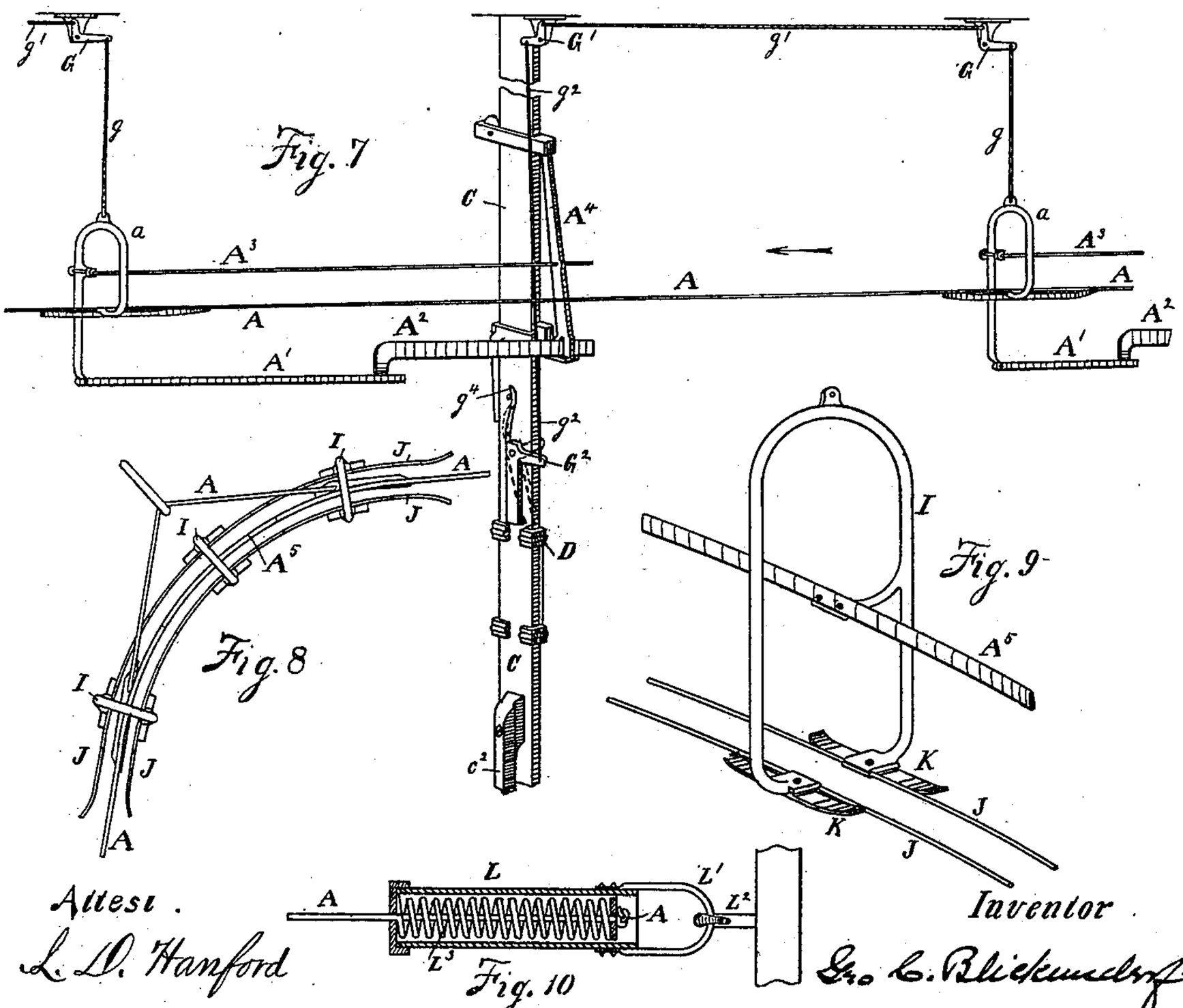

Fig. 7

Fig. 8

Fig. 9

Fig. 10

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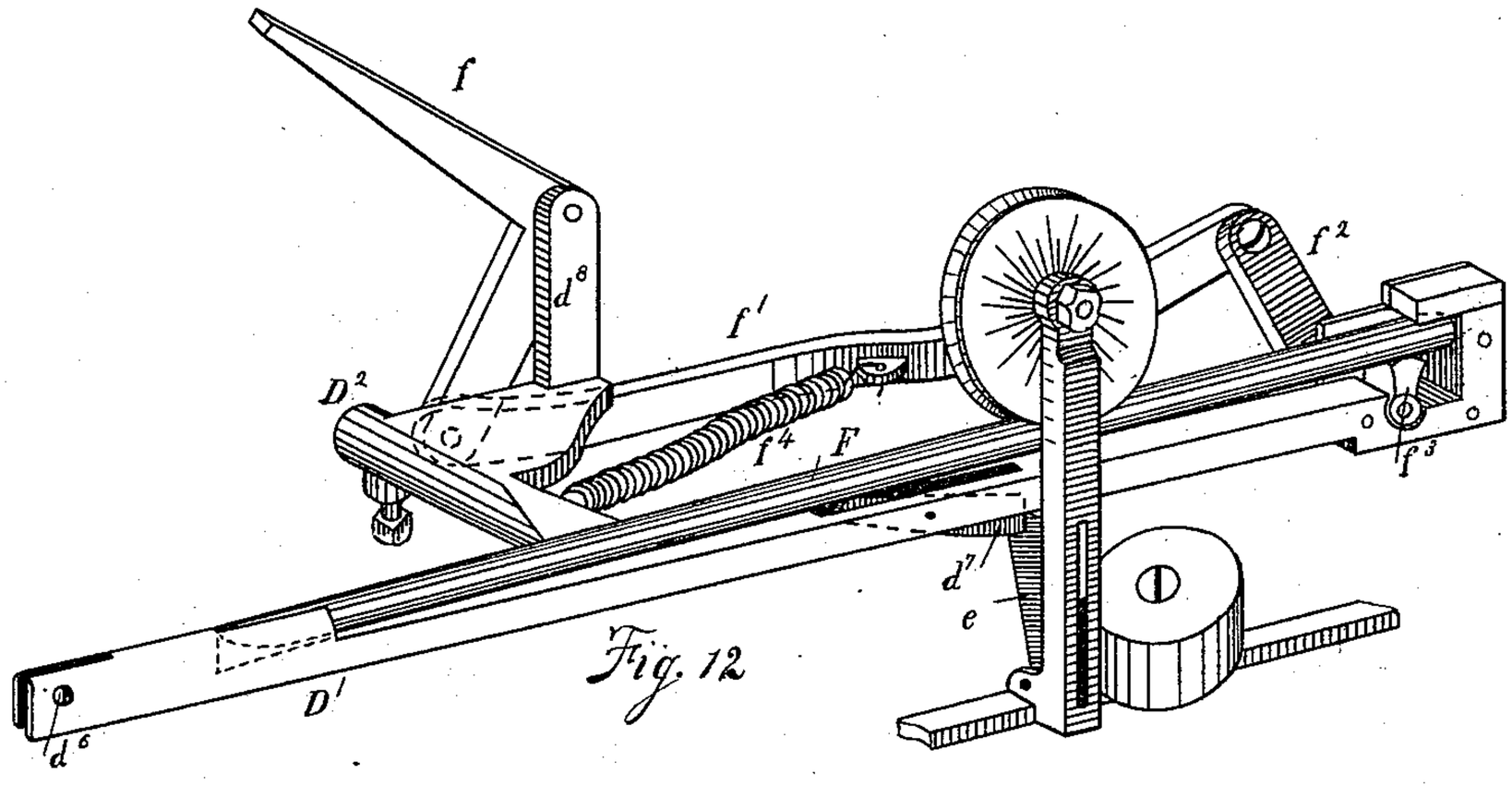

Fig. 12

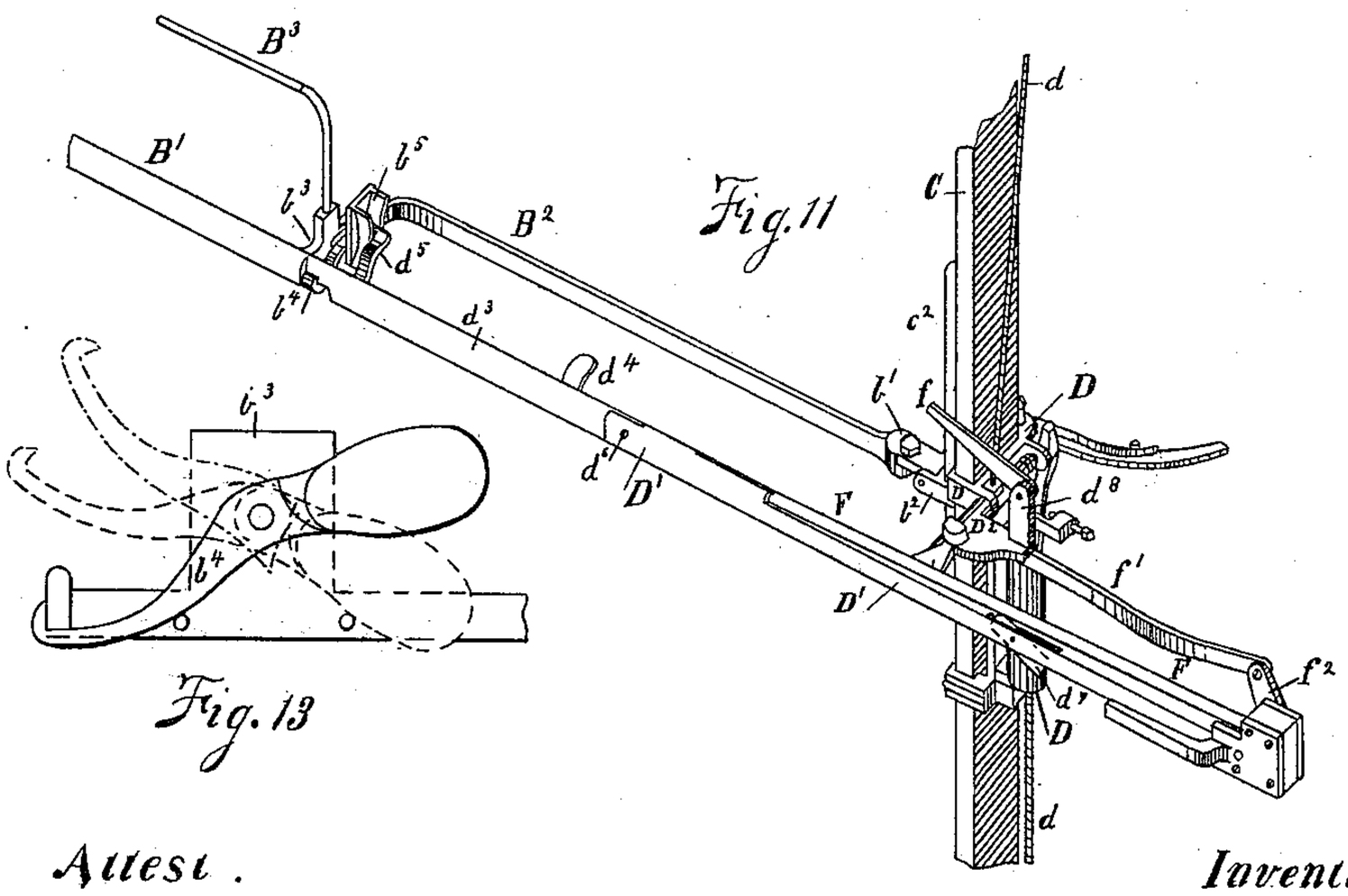

Fig. 11

Fig. 13

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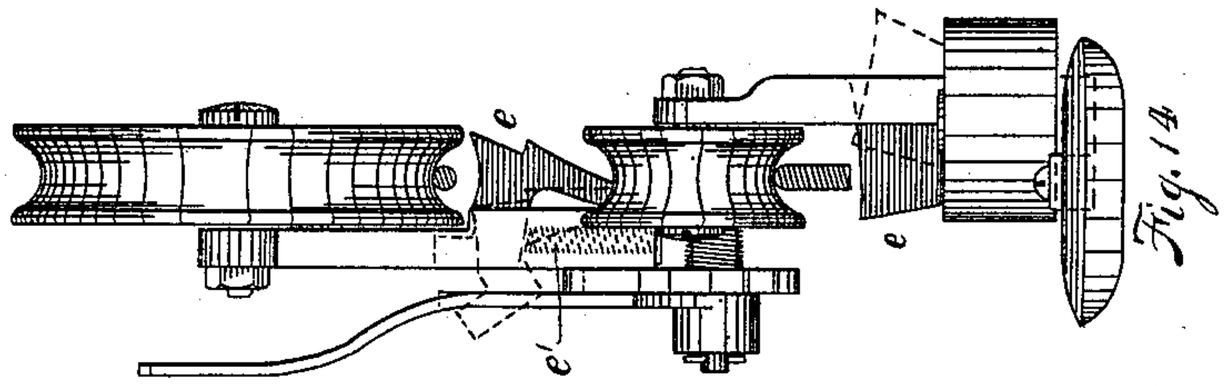

Fig. 14

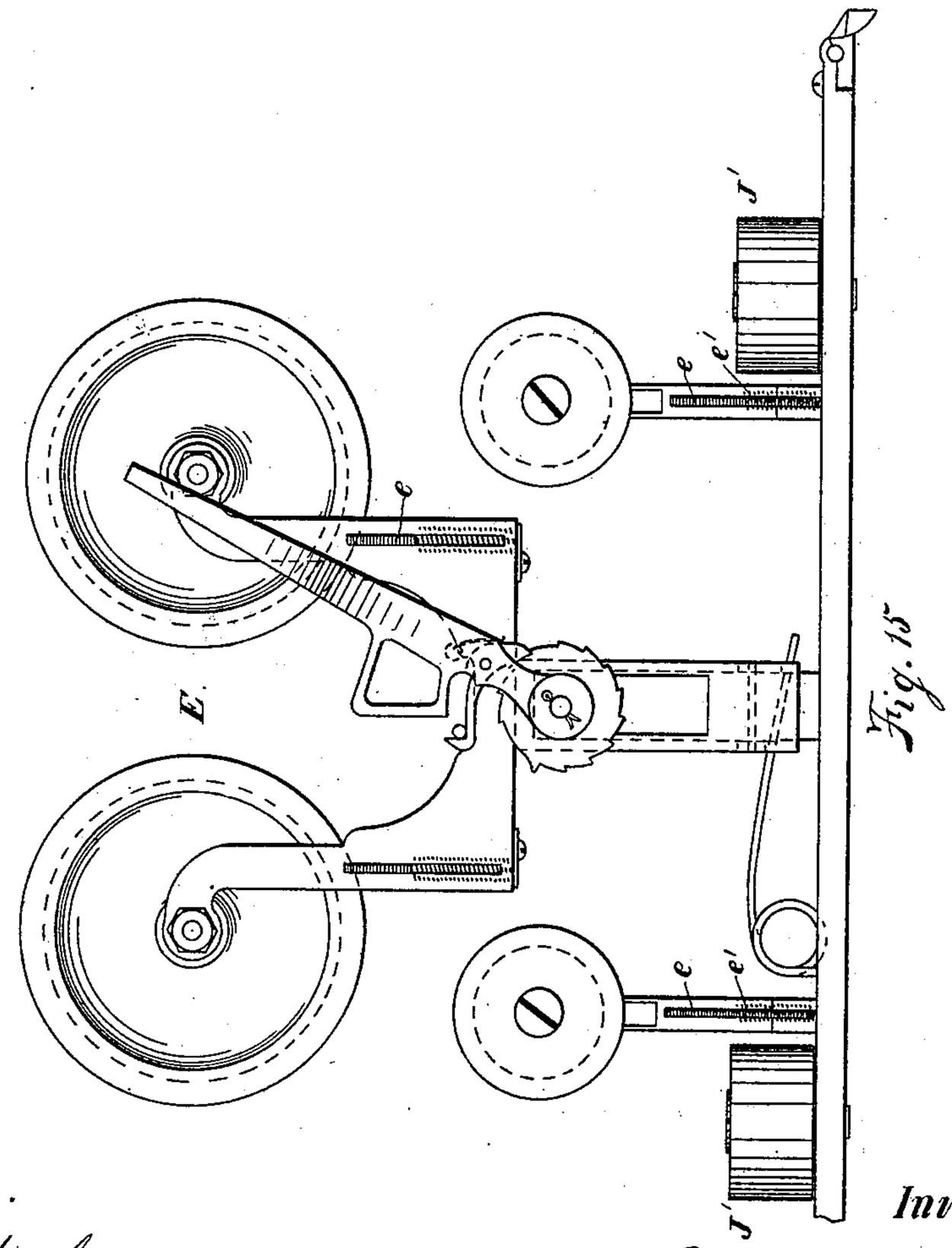

Fig. 15

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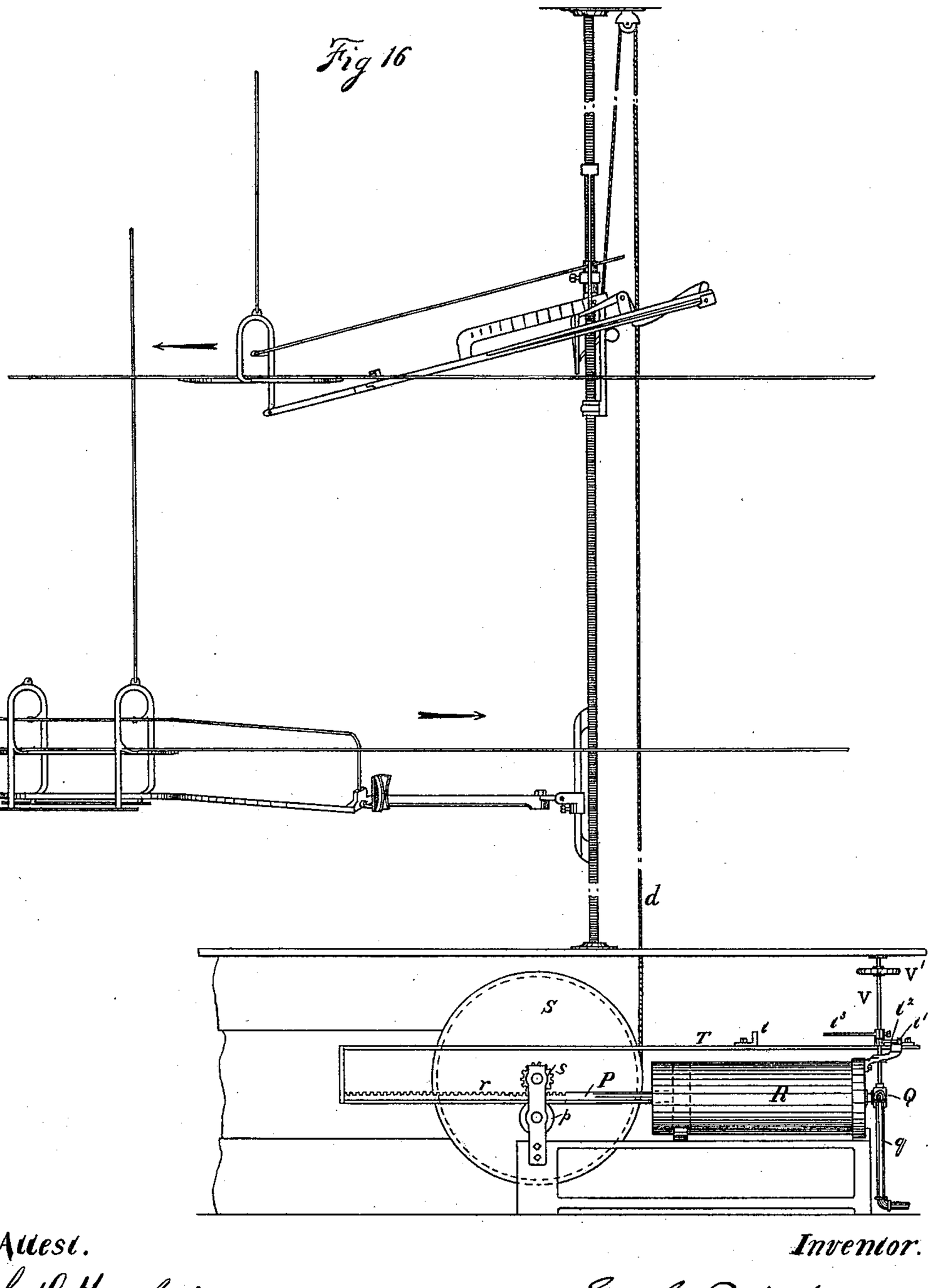
CONVEYER APPARATUS.

No. 338,706. Patented Mar. 30, 1886.

Fig 16



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CONVEYER APPARATUS.

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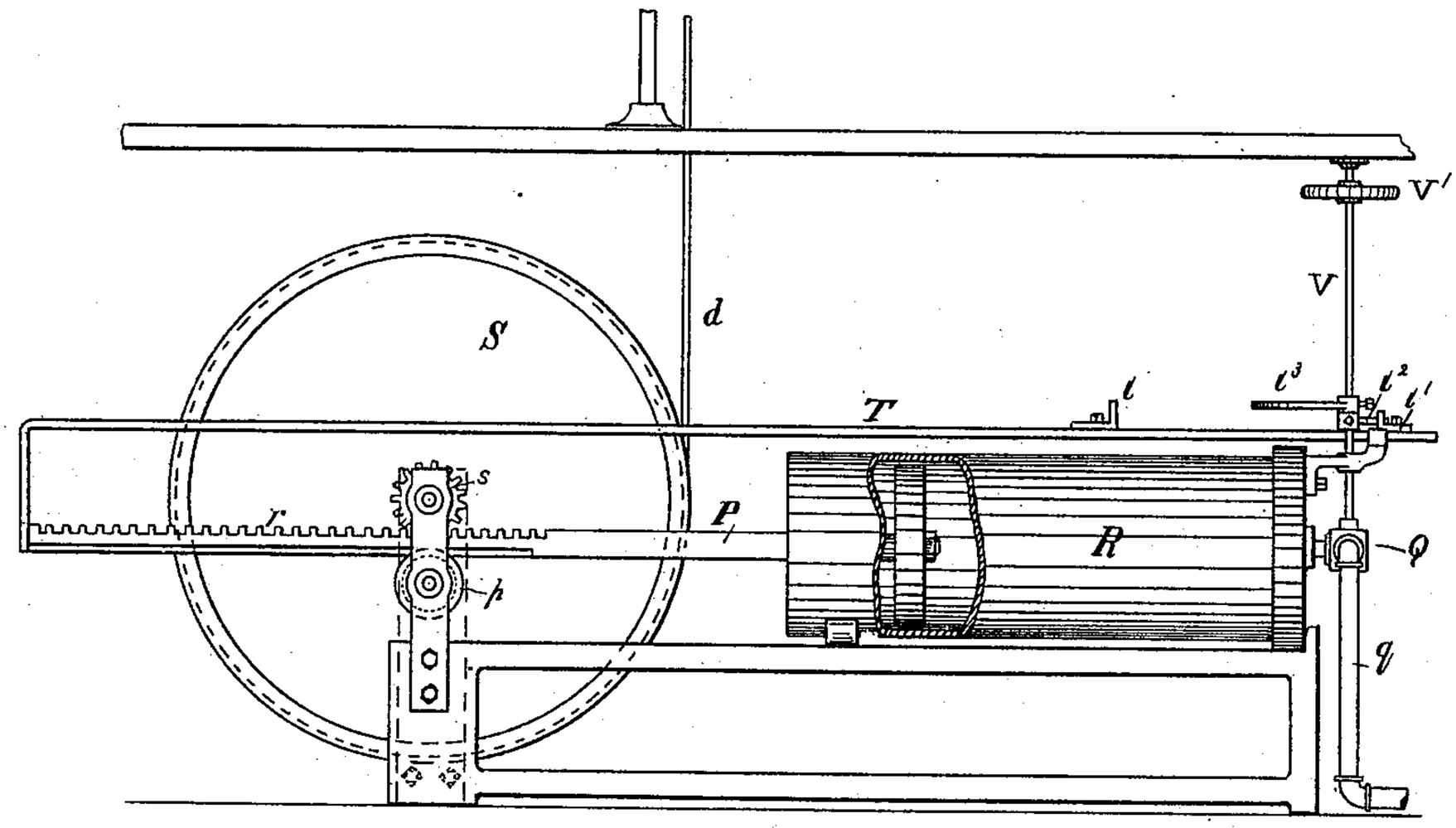

Fig 17

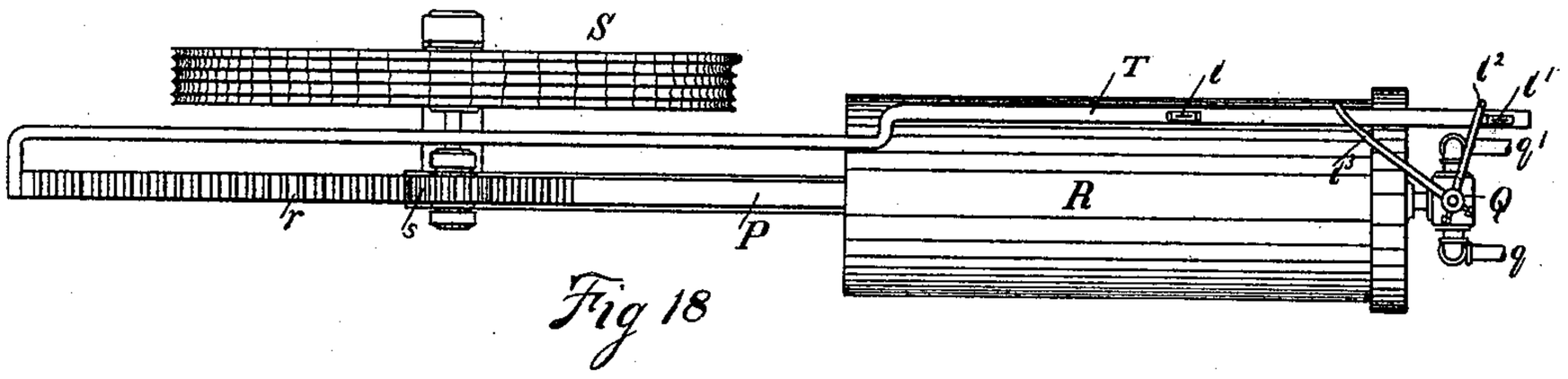

Fig 18

Attest.

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Atts.

UNITED STATES PATENT OFFICE.

GEORGE C. BLICKENSDERFER, OF ERIE, PENNSYLVANIA.

CONVEYER APPARATUS.

SPECIFICATION forming part of Letters Patent No. 338,706, dated March 30, 1886.

Application filed November 13, 1885. Serial No. 182,734. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. BLICKENSDERFER, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Conveyer Apparatus; 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.

This invention relates to conveyer systems for store and other like service; and it consists in certain improvements in the construction and operation thereof, as will be hereinafter fully described and pointed out in the claims.

My invention is illustrated in the accompanying drawings, as follows:

The system shown is similar to that which is shown in several prior applications filed by me in the Patent Office. The tracks are single taut-wire tracks. One grades from a central station to a series of salesmen's stations and the other from the salesmen's stations to the central station. The cars consist of trolleys running on the tracks, and they support receptacles below the tracks, the stem of the trolleys being always on one side of the tracks, and the track-supports on the other side. The cars are also provided with a separate set of wheels for running on the switch-tracks, which are independent of the main tracks, and the transfer of the cars from the main track to the switch-track is effected by tripping the wheels which run on the main track.

Many of my present improvements are not limited in their use of the particular type of conveyer system I here represent; but no explanation or illustration is necessary to enable a mechanic of ordinary skill to apply them to other systems.

Figure 1 is a perspective view of a salesman's station, and shows a car as it appears when just received from the main line B, which is the line on which cars are run from the central station to the way stations. Fig. 2 is a side elevation of a salesman's station, taken from the opposite side of the track from the view in Fig. 1, and it shows a car as it appears when being dispatched from the station onto the main line A, which is the line on which cars are run from the way station to the central station. Fig. 3 is a plan view of the central station, showing the various tracks radiating to different points. Of these tracks those marked A are the ones by which cars are received at the station, and those marked B are the ones by which cars are dispatched from the central station. Fig. 4 is a cross-section through the central station and shows part of the radiating tracks in elevation. Fig. 5 is a side elevation of a track-hanger and terminus-track at the central station. Fig. 6 is a view of the parts seen in Fig. 5, looking from the right of that figure. Fig. 7 is a perspective view of parts of two stations, showing only the track A. This view illustrates the means by which the stop G^2 on the vertical elevator-track C is operated by the weight of a car on the track A, as will be fully explained hereinafter. Fig. 8 is a plan view of a curve in the track. Fig. 9 is a perspective view of a section of the curve. Fig. 10 is a section of a spring-connection for the attachment of the track to the wall. Fig. 11 is a perspective view of the end of a receiving-switch at a way station and also of the car-elevator. Fig. 12 is an enlarged perspective of the means for stopping a car as it runs onto the elevator or onto the terminus-track at the central station, and also the means for releasing the car after it has been stopped. Fig. 13 is an enlarged view of the end of the switch-track B′, seen directly above it in Fig. 11. Fig. 14 is an end view of a car-trolley. Fig. 15 is a side view of the same. Fig. 16 is a side elevation of a way station, and shows an apparatus for operating the elevator, located under the counter. Fig. 17 is an enlarged side elevation view of the hoisting apparatus seen under the counter in Fig. 16. Fig. 18 is a top or plan view of the said hoisting apparatus.

In all of the figures where the track is shown an arrow is placed near it to indicate the direction cars travel thereon.

As many of the parts here shown have been illustrated, described, and claimed by me in other applications now pending in the

Patent Office, I shall now describe only such parts as it is necessary for me to do to properly explain my present improvements.

A marks the track on which cars run to the central station from the way stations; B, the track on which cars run from the central station to the way station. C is the vertical elevator-track at each way station.

D is the elevator; D′, the section of track connected with the elevator; B′, the switch-track by which cars are shunted from the main track B; B^2, the arm supporting the inner end of the switch-track B′; *b b*, the arches which support the point of the switch-track B′.

B^3 is a guide-rail, which prevents the car from swinging as it is run onto the curved switch-track B′.

A′ is the switch-track by which cars are run from the way station onto the main line A.

A^2 is the arm which supports the inner end of the switch-track A′.

A^3 is a guide-rail which holds the car from swinging as it runs from the elevator over the switch A′ onto the track A.

A^4 is a sliding frame on the track C, which supports the ends of the arm A^2 and the guide-rail A^3, said last-named parts having a free endwise movement in the frame A^4.

a is an arch, which supports the points of the switch A′ and the guide-rail A^3, which latter parts are pivoted to the arch *a*.

My present improvements in the construction of the parts just named are as follows: By placing the guide-rails B^3 and A^3 at the switches, as shown, the cars are prevented from vibrating or swinging on the track when received or when dispatched. These rails A^3 and B^3 come in contact with the sides of the upper wheels on the car, and hold the car steady so that it will run off onto the main track, as seen in Fig. 2, without swinging, or it will run onto the elevator-track without swinging or vibrating. Heretofore the arm B^2 has been connected directly to the track C.

I have found in putting up the systems a good deal of difficulty in getting the parts properly adjusted when the arm B^2 is thus attached to the track C, and I have succeeded in remedying the difficulty by putting in a link, b', with a double joint between the arm B^2 and the bracket b^2, and making the bracket b^2 adjustable vertically on a grooved block, c^2, on the side of the track-bar C.

Another improvement consists in providing means for holding the end of the track-section on the elevator squarely in front of the switch-track B′. This consists in providing the track-section D′ with an arm, d^5, (see Fig. 11 for best illustration,) with a finger extending therefrom, and a grooved block, b^5, to receive said finger and hold the end of the track-section in proper place. The groove in the block b^5 is wide at top and bottom, but narrow at the point where the finger must be to hold the track-section in place. This form (seen clearly in Fig. 2) insures the free entrance of the finger to the groove as the elevator moves up or down.

I have found it to be very important that a car, when it runs onto the elevator or onto the terminus-track at the central station, be stopped gradually, and when stopped held firmly so there can be no rebound. This is particularly essential when it runs onto the elevator. The means I have provided to accomplish this result are shown clearly in Figs. 11 and 12. They consist of a spring-bar, F, which is set in the top of track-section D′ on the elevator, (or in the terminus-track A^6, at the central station, as seen in Fig. 4,) and is pivoted to that part at its front end, and its back end is elevated so that it stands at an angle to that part, and is unsupported between its ends, and free to spring down when pressed. Its near end rests on the short end of the lever $f^2 f^3$, and as said lever is moved the bar F will be raised or lowered according to the direction of movement of that lever.

In Fig. 12 a fragment of a car is shown as it appears when the car has run onto the spring-bar. It will be seen that the spring-bar and the bar on which it rests have become wedged in between the wheel and the tongue *e*. This wedging action of the parts stops the car, and as the bar F will spring or yield the stopping will be effected without sudden jar. When it is wanted to release the car, the lever $f^2 f^3$ is moved, so as to let the back end of the bar down so it will lie parallel with the bar below it.

At the central station, as seen in Fig. 4, the long end f^2 of this releasing-lever is made in the form of a handle, and the attendant moves this handle when he desires to release a car; but on the elevators the lever is moved automatically when the elevator reaches the point where the car should run off of it, as seen in Fig. 2. The means for effecting this automatic action are the lever *f* and the connecting-bar *f′*, which are clearly seen in Figs. 11 and 12, and in Fig. 2 the parts are all shown in the position they occupy when a car is released, when it will be seen that the lever *f* has come in contact with the frame A^4, and been depressed as the elevator and the frame have been lifted up to tip the switch.

To insure the retention of the car on the elevator until it is desired that it shall go, a pivoted catch, d^7, is set in a mortise in the lower bar in such a manner that it will hang below the lower bar and fall in behind the tongue *e* on the car, and thus hold the car in place until the bar F is let down, when it will be tilted up by the bar F dropping onto its upper end.

In sending a car off from the elevator onto the track A care has to be taken not to let it go at such a time as to collide while on the switch A′ with another car passing on the track A. I have found it to be desirable to provide means to prevent the dispatching of a car from a station while another car is passing on the main track. The devices for this purpose are clearly illustrated in Fig. 7, and are as follows:

The track A is suspended from the ceiling by a cord, *g*, which is attached to one arm of a bell-crank lever, G, which is pivoted to a bracket on the ceiling. A second cord, *g'*, runs to another bell-crank, G', on the top of the elevator-track C, and a third cord, g^2, runs down by the side of the elevator-track and takes hold of the arm of a pivoted stop, G^2, on the track C. The adjustment of parts is such that when there is no car on the track A in the vicinity of the suspending-cord *g* the catch or stop G^2 will be in the position shown in full lines, which position is such as to allow the elevator D to pass the stop G^2; but if a car is on the track in the vicinity of the cord *g* its weight will depress the track A enough to move the parts so as to bring the stop G^2 into the position shown in dotted lines, and when this is the case the elevator D cannot be raised past the stop, and of course a car on the elevator cannot be dispatched onto the track A.

Heretofore the elevator has been raised and lowered by the attendant drawing on the cord *d*. I have shown in Figs. 16, 17, and 18 a hoisting apparatus for operating the elevator. It consists of a cylinder, R, and piston P, a winding-drum, S, means for operating said drum from the piston, and means for actuating the piston. The construction is as follows: The cylinder is connected by a two-way valve, Q, with a compressed-air-supply pipe, *q*, and an exhaust-pipe, *q'*. When the valve is in one position, the cylinder will be supplied with compressed air from the pipe *q*, which will drive the piston forward, and when in another position the exhaust-pipe will be open and the piston can react. I have not shown in detail the construction of the valve Q, as it is of common and well-known construction. A valve-stem, V, with a hand-wheel, V', is used to move the valve to open the supply-pipe; but tappet-arms t^2 and t^3 and tappets *t* and *t'* on a tappet-rod, T, are used to open the exhaust and close the valve. The piston-stem is provided with a rack, *r*, which meshes with the spur-gear *s* on the shaft of the winding-drum S, and thus motion is communicated from the piston to the winding-drum. The piston does not fit so tight in the cylinder but what the weight of the elevator will react it when the exhaust is open. This hoisting apparatus need not be used at all the stations, for at some the cars are always lightly freighted, while at others the cars are generally heavily freighted. The hoist will be found convenient at the latter stations.

The hoisting device need not necessarily be operated by a motor, as the drum may be revolved by a crank, or otherwise.

Another important feature of this construction is the manner of securing the lines of track at the central station. This is well shown in Figs. 3 and 4, and is as follows: Over a proper desk or counter is securely fixed a strong iron frame, H', which I prefer to make of iron tubing. On this are clamped hangers H, on the lower end of which are arms A^7, to which the terminus-tracks A^6 are attached. Both the incoming tracks A and the outgoing tracks B are thus secured, and they should be placed side by side for convenience, as shown in Fig. 3, where four sets of tracks are shown.

The position of the car as it runs into the central station is clearly shown in Fig. 4. The car as it comes in is checked by the spring-bar F, and when it is to be transferred onto the outgoing track it is released by moving the handle f^2, as above explained, and the attendant places it on the outgoing track.

Another feature of this construction relates to curves. It is illustrated in Figs. 8 and 9, and consists in suspending below the curve track two guards, J J, one on each side, to prevent the cars from acquiring a swinging movement by running around the curves. There are rollers J on the car, which come in contact with the guard-rails. The guard-rails are supported by arch-irons I, which are secured to the curve tracks A^5, as is clearly seen in Fig. 9, and there are fender-plates K K on the feet of the arch-irons to prevent the car from catching on them as it passes. I have shown in a former application a guard-rail on the outside of the curves; but I have found by experience that both an outer and an inner guard-rail are required to get the best results.

The car shown in the drawings is substantially the same as I have shown in former applications, only the tongues *e e* are a new feature. They are for the purpose of preventing the derailment of the car. Their novelty consists in the manner of their adjustment and operation. They consist of thin plates of steel pivoted in slots in the car-frame, into which they may be pushed and from which they will be expelled by springs *e* contained therein. The position of these tongues with relation to the tracks is shown in Fig. 14, where the car is represented as just entering a switch, and so both tracks are seen, and by dotted lines the position of the tongues is shown when pushed into the slots in the frame of the car, which position they assume when the car is passing a track-support, which are provided with fenders for that purpose.

What I claim as new is—

1. In a conveyer apparatus, substantially as shown, the combination, with the switch-track, of a guide-rail placed to come in contact with the upper part of the car-frame while the car is running on the switch-wheels, substantially as and for the purposes set forth.

2. In a conveyer apparatus, substantially as shown, the combination, with the switch-track B' and arm B^2, supporting the inner end of said track, of the bracket b^2, adjustable vertically on the elevator-track C, and the link *b'*, connecting said arm B^2 and bracket b^2 by a double joint, substantially as and for the purposes mentioned.

3. In a conveyer apparatus, substantially as shown, the combination, with the receiving-switch track B' and the elevator-track

section D′, of the grooved block b^5 by the side of the end of the switch-track and the arm d^5 on the elevator-track section D′, adapted, as shown, to enter the grove in said block b^5, substantially as and for the purposes set forth.

4. In a carrier apparatus, substantially as shown, the combination, with a terminal track, whether at the central station or at the way stations, of pivoted bar F, set in the face of the track and provided with means for raising and lowering its free end, substantially as and for the purposes set forth.

5. In a carrier apparatus, substantially as set forth, the combination, with the terminal track, whether at the central station or at the way stations, of a pivoted spring-bar, F, set in the face of the track and provided with means for raising and lowering its free end, substantially as and for the purposes set forth.

6. In a conveyer apparatus, substantially as shown, the combination, with a terminal track-section, of the pivoted bar F, the lever f^2 f^3, for raising and lowering the said bar F, the pivoted catch d^7 below the bar F in position to be tilted by said bar F, and a car having a stop or projection below the wheel, substantially as and for the purposes set forth.

7. In a carrier apparatus, substantially as set forth, the combination, with the elevator-track section D′, of the pivoted bar F, the lever f^2 f^3, the connecting-rod f', and the lever f, said parts being arranged substantially as and for the purposes set forth.

8. In a conveyer apparatus, substantially as shown, the combination, with the elevator track or way C, of a movable stop or catch by which the elevator may be stopped from going up, a yielding support for the main track A at a point in advance of the elevator, which will be depressed by a car passing on said main track A, and connecting devices, substantially as shown, connecting the said yielding track-support with the said movable stop, substantially as and for the purposes set forth.

9. In a conveyer apparatus, the combination, substantially as shown, of an elevator way or track, a car-elevator moving on said track, a cord for operating said elevator, and a winding-drum for operating said cord.

10. In a conveyer apparatus, the combination, substantially as shown, of an elevator track or way, a car-elevator moving on said way, a cord for moving said elevator on said way, a winding-drum for operating said cord, and a motor for operating said winding-drum.

11. In a conveyer apparatus, the combination, with the converging tracks at the central station, of the frame N′, hangers H, clamped upon said frame, arms extending from said hangers, and terminal track-sections attached to said arms, substantially as and for the purposes set forth.

12. In a conveyer apparatus, the combination, with the curve-track section A^5, of the arch-irons I, supporting curve-guards J J below the track, substantially as and for the purposes set forth.

13. In a conveyer apparatus, the combination, with the curve-track section at the angles of the track-line, of two curved guard-rails suspended below and on each side of the said curve-tracks, substantially as and for the purposes set forth.

14. In a conveyer-apparatus car, the combination, with the wheels, of the thin tongue-pieces *e*, pivoted in slots in the frame-pieces of the car directly below the wheels, and springs *e′*, for expelling said tongues from said slots, substantially as and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEO. C. BLICKENSDERFER.

Witnesses:
JNO. K. HALLOCK,
ROBT. H. PORTER.