

(No Model.)

4 Sheets—Sheet 1

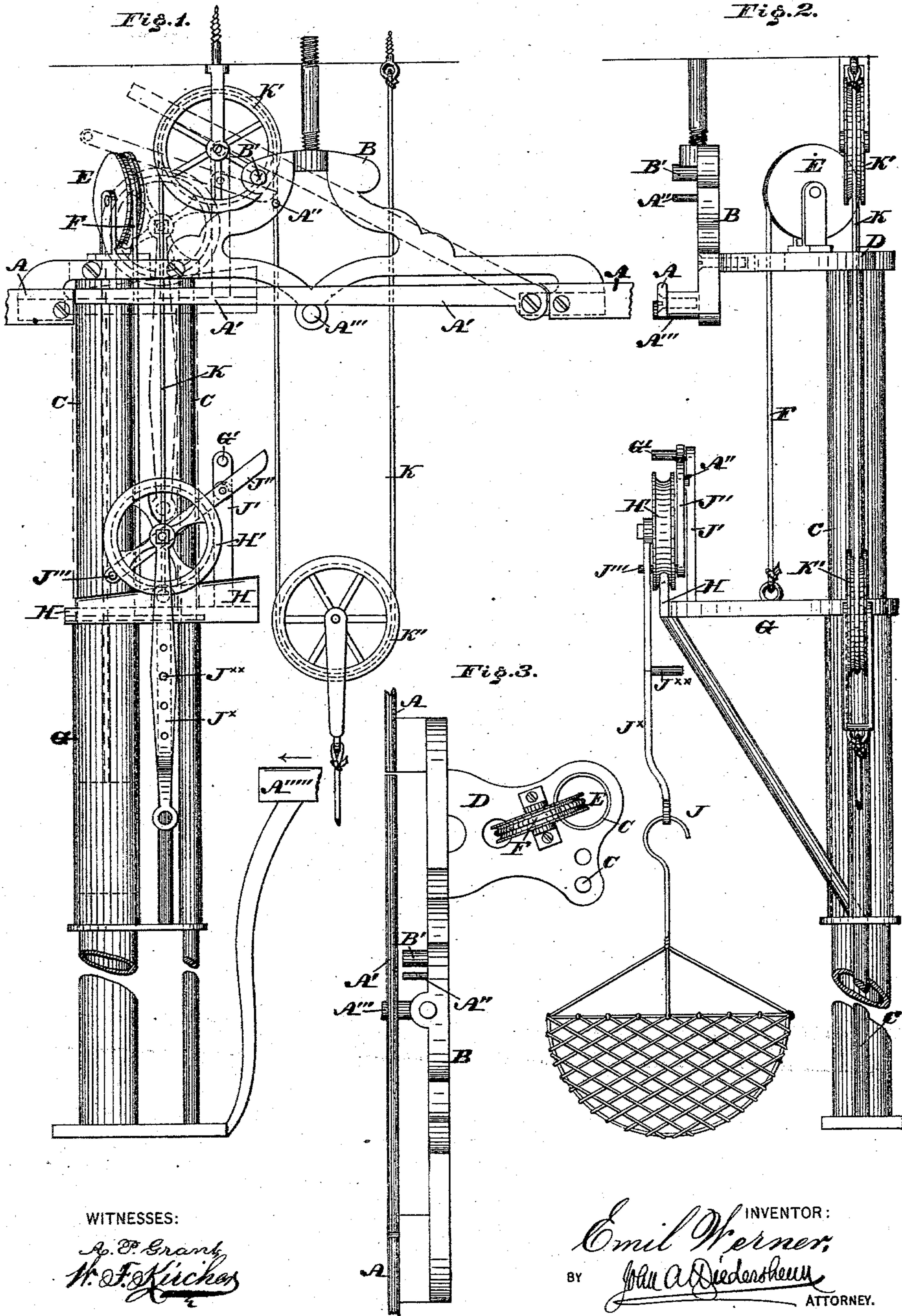
E. WERNER.
STORE SERVICE APPARATUS.

No. 283,543.

Patented Aug. 21, 1883.

Fig. 1.

Fig. 2.



WITNESSES:

A. P. Grant
H. F. Kuchas

INVENTOR:

Emil Werner
BY *John A. Diedenheuer*
ATTORNEY.

(No Model.)

4 Sheets—Sheet 2.

E. WERNER.
STORE SERVICE APPARATUS.

No. 283,543.

Patented Aug. 21, 1883.

Fig. 4.

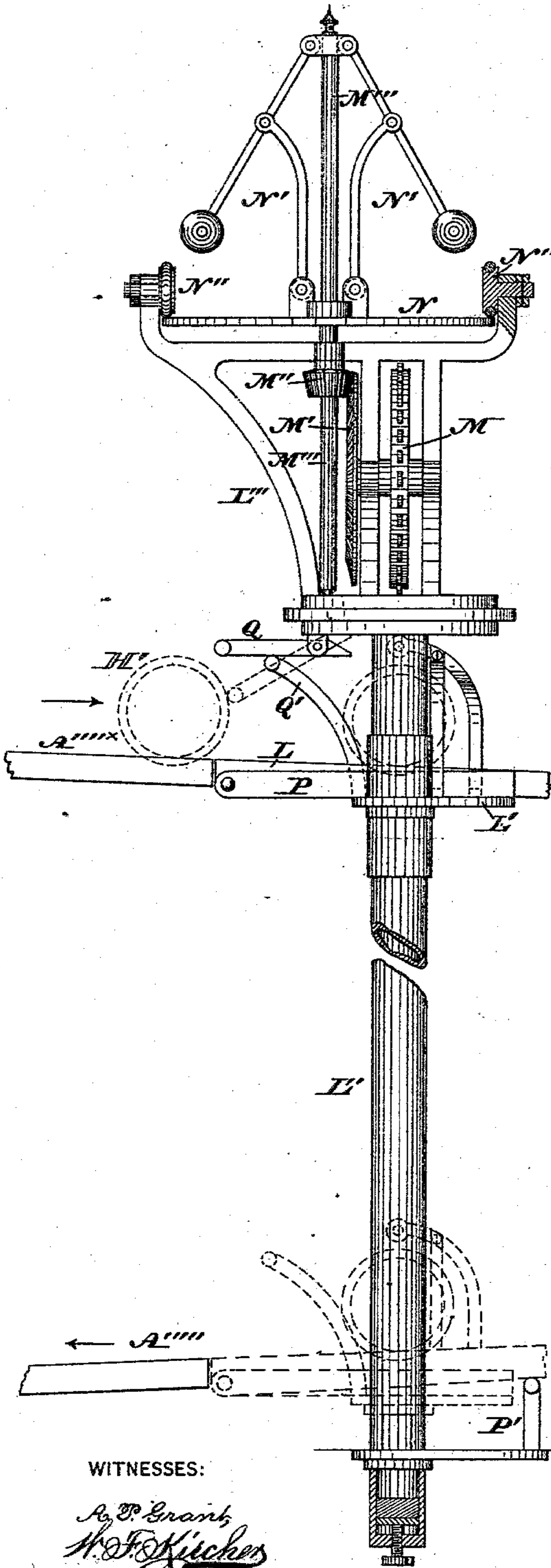
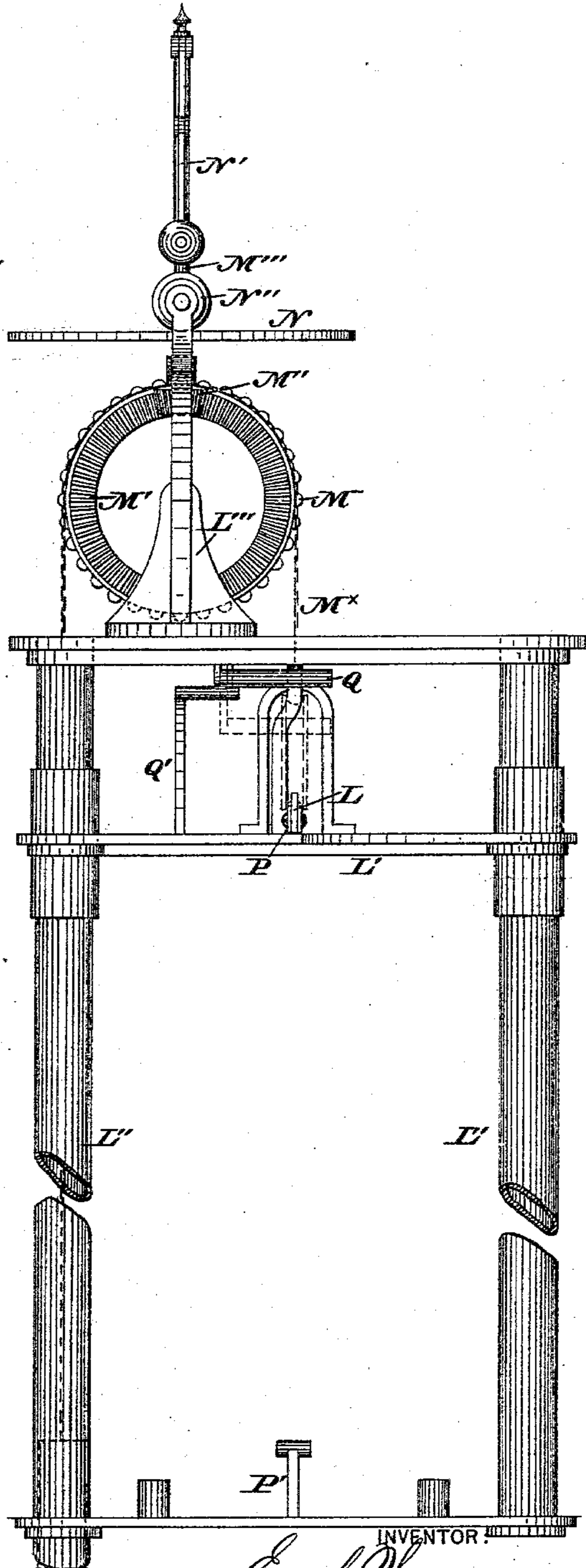


Fig. 5.



WITNESSES:

R. B. Grant,
H. F. Fischer

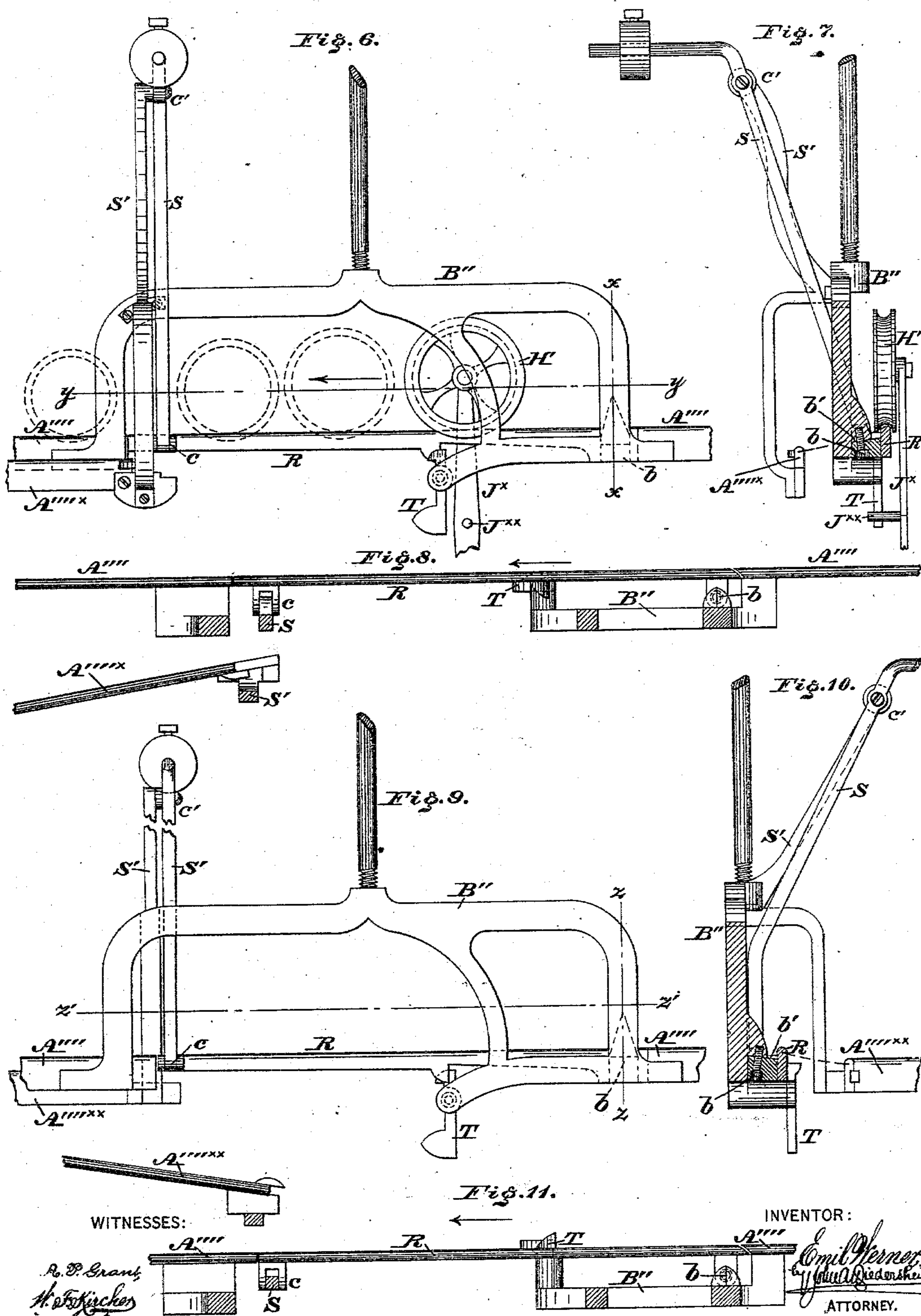
BY

Emil Werner,
John A. Diederheim
ATTORNEY.

4 Sheets—Sheet 3.

No. 283,543.

Patented Aug. 21, 1883.



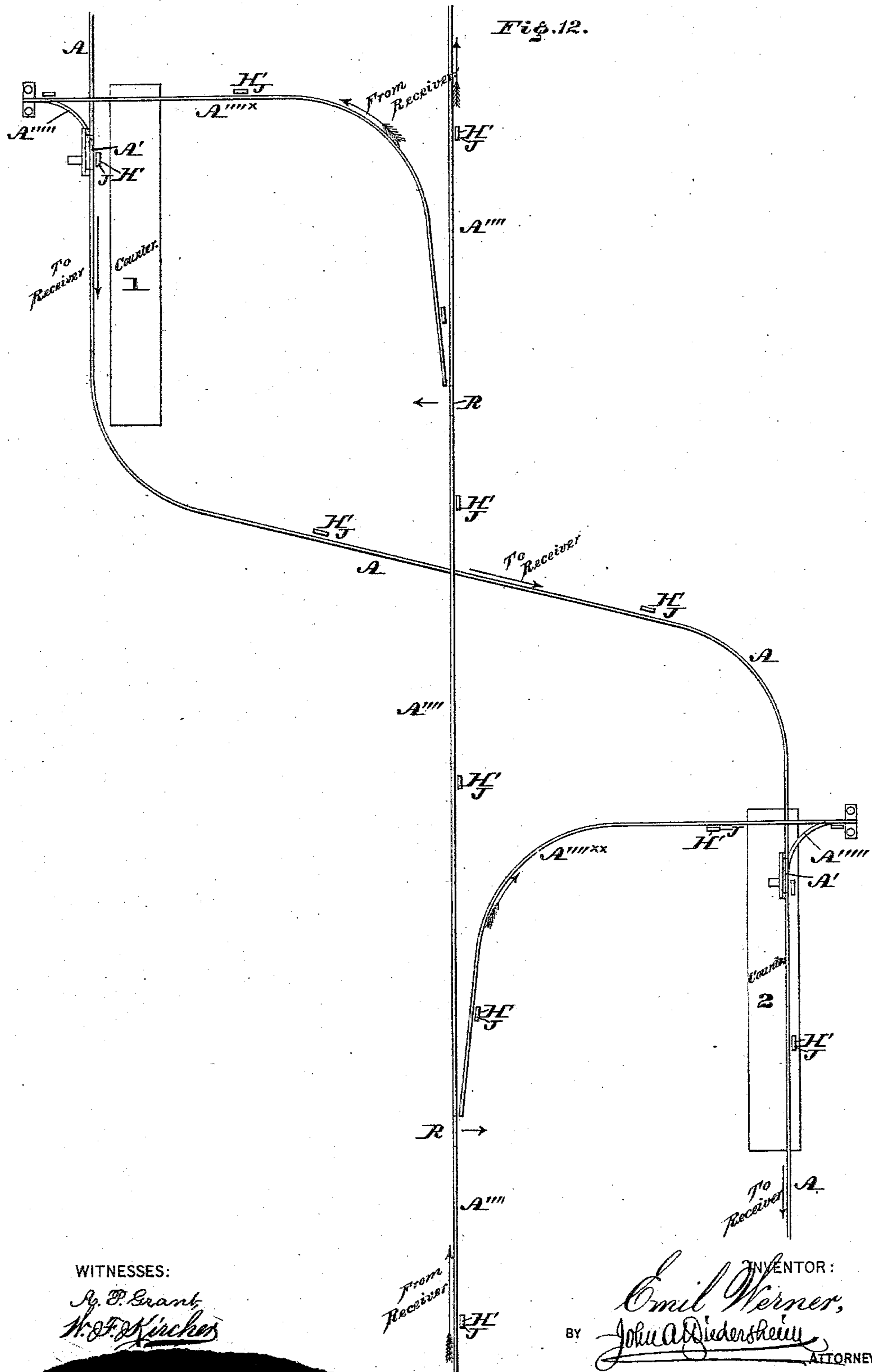
(No Model.)

4 Sheets—Sheet 4.

E. WERNER.
STORE SERVICE APPARATUS.

No. 283,543.

Patented Aug. 21, 1883.



UNITED STATES PATENT OFFICE.

EMIL WERNER, OF PHILADELPHIA, PENNSYLVANIA.

STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 283,543, dated August 21, 1883.

Application filed June 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, EMIL WERNER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Store-Service Apparatus, which improvement is fully set forth in the following specification and accompanying drawings, in which—

10 Figures 1 and 2 are side elevations of the hoisting devices of store-service apparatus embodying my invention. Fig. 3 is a top view thereof. Figs. 4 and 5 are side elevations of the lowering devices thereof. Fig. 6 is a side elevation of the switch mechanism thereof. 15 Fig. 7 is a vertical section in line *x x*, Fig. 6. Fig. 8 is a horizontal section in line *y y*, Fig. 6. Fig. 9 is a side elevation of the switch mechanism opposite to that of Fig. 6. Fig. 20 10 is a vertical section in line *z z*, Fig. 9. Fig. 11 is a horizontal section in line *z' z'*, Fig. 9. Fig. 12 is a top or plan view illustrating the system embodied.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of store-service apparatus provided with means for conveniently and easily elevating the load or goods conveyed to the main track, releasing the same, 30 and causing it to advance with certainty to the receiver or receiving department, where the goods are wrapped, packed, or bundled, money acknowledged, change made, &c. The conveyer is returned to its starting place, provision being made for automatically operating 35 switches along the line or track, so that each conveyer returns to its own counter or starting-place, and the speed of the descending conveyer as it leaves the main track is nicely 40 governed and uniformity maintained, all as will be hereinafter fully set forth.

Referring to the drawings, A represents an elevated track properly sustained on hangers B, which are secured to the ceiling of the store 45 or apartment containing the apparatus.

C represents columns, one or both of which being hollow, properly supported on a counter in the store, to the top whereof is attached a plate, D, on which is mounted a pulley, E, 50 around which passes a rope or chain, F, one

end of which is secured to a rising and falling bracket, G, and the other end to a counterweight which is located within one of the columns C. The bracket G is guided on the columns C, and carries a short rail, H, the top 55 whereof is inclined, and on which is run the roller H' of the conveyer J.

J' represents an arm which rises from the bracket, and to it is pivoted a brake-lever, J'', one end of which has a shoe, J''', so disposed 60 that it bears against the periphery of the roller H' and prevents rotation of the latter. To the bracket G is also attached one end of a cord or chain, K, which passes around a pulley, K', secured overhead, the other end of the cord 65 being likewise secured overhead. A pulley, K'', rests on the cord or chain between the upper end of the same and the pulley K', whereby by drawing down said pulley K'' the cord or chain K is adapted to raise the bracket G 70 and attached parts to the track A.

The track A has a pivoted section, A', which occupies a position above the track H, so as to be raised by the latter when elevated, said section, when lowered, preserving the continuity of the track A, the raising of the section 75 being accomplished by means of a pin, G', which projects horizontally from the arm J' of the bracket G.

Projecting horizontally from the hanger B 80 is a pin or stud, B', which is so disposed that when the bracket G is raised the brake-lever J'' strikes said pin or stud, thus causing the shoe J''' to leave the periphery of the roller H', so that the latter is uncontrolled and permitted 85 to roll down the track H, whereby it reaches the main track A, and the load or article suspended from or attached to the conveyer is carried by said roller to its destination—viz., the receiver, cashier, clerk, or other proper 90 party of the store or business.

In order to limit the ascent of the lever J'', a stop, A'', is provided, the same projecting from the hanger B, adjacent to the pin or stud B', so that the end of said lever J'' abuts against 95 said pin and stop, and is thereby held; or said stop may be secured to the brake-lever J'' and abut against the arm J'. When the pivoted section A' of the track is in its lowermost position, it is sustained by an arm, shoulder, pin, 100

or projection, A''' , on the lower end of the hanger B. The conveyer, having been started on its way to the receiver, cashier, or other proper party, reaches the locality of said party, whose position is such as to be able to remove the goods, money, &c., of the load within the basket of the conveyer, and said conveyer, with its reloaded basket, is lifted from the track A and placed on another track, A'''' , (see Fig. 12,) for directing it back to branch rail A''''^x or A''''^{xx} , where the elevating device hereinbefore described is located, the tracks $A A''''$ being inclined in reverse order. The terminus of the track A''''^x is adjacent to a rail, L, the latter being supported on a rising and falling carriage, L' , which is guided on columns L'' , properly secured in position on a counter or table in the store where the apparatus is employed.

Mounted on a frame, L''' , supported on the top connecting cross-piece of the columns L'' , is a chain-wheel, M, to the shaft of which is connected a bevel-wheel, M' , which meshes with a bevel-pinion, M'' , whose shaft M''' extends upright, and has loosely fitted on it a horizontally-arranged disk, N, to which are attached the arms N' of a governor, said arms depending from the shaft M. The frame carries two or more friction-pulleys, N'' , which have horizontal axes, and are disposed above the disk N, so that they may be engaged by the latter when the disk is raised by the action of the governor.

In order to rotate the shaft or stem M''' , and consequently the governor-arms, the wheel M has a chain or rope, M^x , passed around it, one end whereof is connected with the carriage L' , and the other end with a counter-weight located in one of the columns L'' , it being evident that the motion of the carriage imparts motion to the chain, and thus to the shaft or stem M''' through the medium of the intermediate parts.

P represents the vertical guide, to which is pivoted the rail L on the carriage L' ; and P' represents an abutment extending upright and secured to the lower portion of one of the columns L'' , so that the rail will strike said abutment when the carriage descends, and thereby be raised, the effect of which is to direct the roller H' of the conveyer J, occupying the rail L, from such position on the rail L, and cause it to ride on a track, A'''' , which is mounted in such manner as to form a continuity of the rail L when lowered, said track A'''' being inclined in reverse order to the rail A''''^x , and extending toward the columns C, to which (in the present case) it is secured, the end of said track A'''' terminating where the rail H begins, so that when the bracket G is lowered the track A'''' and rail H are in communication, and the roller H' may again reach said rail H, and be held by the brake-shoe ready to be raised with the conveyer to the track A' , and again begin its circuit.

The brake-lever J'' may be lowered by grav-

ity or the action of a spring suitably applied; but I prefer to avoid springs in the entire apparatus.

When the carriage L' is lowered, it is necessary to prevent the next conveyer reaching the end of the rail A''''^x or A''''^{xx} from dropping into the gap created by the descent of the carriage. For this purpose there is pivoted to the under side of the top cross-piece of the columns L'' a gravitating arm, Q, and secured to the upper side of the carriage L' a lifting-arm, Q' , the object whereof is to hold said arm Q sufficiently high so as to permit the roller H' of the conveyer to pass under the same and reach the rail L. When the carriage descends, the arm Q' leaves the arm Q, and the latter falls and occupies a position in the path of the roller of the advancing conveyer, so as to stop the same. (See Fig. 4.) When the carriage returns to its normal position, the arm Q is again raised and the conveyer rolls on the rail L, ready to be lowered, as previously set forth. At proper places switches are employed, so that goods or loads may be sent to and from different parts of the store or apartment.

Referring to Figs. 6 to 11, inclusive, R represents a switch-rail in the length of the rail A or rail A'''' . The number of switches employed is equal to the number of counters from which goods or loads are to be sent, two being shown in the present case in Fig. 12, one shifting to the right for returning a conveyer to counter 2 and the other to the left for returning a conveyer to counter 1.

Each switch-rail, consisting of a single face rail, is pivoted at one end by a vertical pin, bolt, or screw, b , and supported on the other end, c , on an inclined weighted arm, S, which is pivoted, as at c' , to an arm, S' , rising from and secured to the hanger B'' , which supports the lengths of the rail A adjacent to the switch-rail, the weight on said arm S being inferior to that of the conveyer and superior to that of the rail R, so that when the conveyer rolls on the rail R its weight on said rail causes the latter to move down with the arm S on its pivot c' , describing the arc of a circle and passing to the siding or turn-off A''''^x or A''''^{xx} , it being noticed that the latter is lower than the main track, the radial motion of the rail R being permitted at the pivot b , owing to the inclination b' of the upper face of the rail and lower face of the part of the hanger B'' , to which the pivot b is screwed or affixed, said faces being contiguous. As soon as the conveyer leaves the turn-off, the rail R, under action of the weighted arm S, returns to its normal position, rising to the same, and so preserves the continuity of the main track A'''' . In certain cases it is required that the conveyer continue on the main track. For this purpose the rail R is firmly held as the conveyer passes over the same. Depending from the hanger B'' is a gravitating latch, T, the upper end whereof engages with a lug on the

side of the rail R, so as to prevent motion of the same. The arm J^x, which is attached to the axis or frame of the roller H' and carries the basket of the conveyer J, has a laterally-projecting pin, J^x, which is adapted to directly engage with or to strike the latch T, in order to release the switch-rail R and permit operation thereof, or so located as to clear said latch, or be entirely dispensed with, whereby the rail is permitted to remain at rest, so that a conveyer returning to the counter 2 will automatically shift the relative switch-rail A^{'''x}, while a conveyer returning to the counter 1 will pass the switch of counter 2 without operating it, and when it reaches the switch for said counter 1 it will shift the rail R thereof, whereby the conveyer rolls on the rail A^{'''x}. The hanger B' is that employed for supporting the main track at the head and butt-ends of the switch-rail.

Where several switches are required, latches T of different lengths are employed, and the arm J^x of the conveyers provided with pins J^x located at different heights on one side, so that each conveyer automatically seeks its own siding, and so returns to the starting-point.

It will be seen that when the load or goods, money, &c., are placed in the basket or conveyer the latter is raised to the level of the track A. The section A' of the track rises and the rail H occupies its position. The brake-lever is operated by the pin or stud B', and its shoe clears the roller H', whereby the conveyer immediately passes to the track A and runs down the same to the receiver or the place where the load or goods are packed, money accounted for, change made, &c. When the conveyer leaves the rail H, the bracket G is lowered, thus placing said rail in its normal position adjacent to the end of the rail A^{'''}. The receiver removes the goods and transfers the conveyer to the track A^{'''}, placing therein the bundle or package of the goods, receipt for money and change, and other matter, if any, and lets the conveyer run down said track A^{'''}.

Should the load have originally started from counter 1, the pin of the conveyer will pass the switch-rail of the counter 2 without the pin J^x operating the latch T, said rail thus remaining unmoved, and the conveyer continues on the track A^{'''} until it reaches its own switch, when the pin J^x strikes the latch T and shifts the switch, whereby the conveyer reaches the track A^{'''x}, and is thereby directed on the rail L of the carriage L'. The latter, owing to the superimposed weight of the conveyer and contents, begins to descend, and when the lever P strikes the projection P' said lever is raised, thus throwing the roller H' on the rail A^{'''}, which being inclined causes the conveyer to return to the rail H, which being reached again supports the conveyer. The latter may then receive another supply of goods, money, &c., and the bracket may be

raised, placing the rail H in communication with the track A, whereby the conveyer begins its circuit on the tracks, as hereinbefore stated. When the carriage L' descends with the load, rotation is imparted to the governor-arms. As the speed increases said arms rise, as usual in governors, and the disk N is elevated and caused to approach and ride on the friction wheels or pulleys N'. When the speed of the carriage increases and becomes excessive, the disk is tightened against the friction-wheels, thus checking the rotation of the governor-arms, the gearing, and the paying off of the chain M^x, and causing the carriage to descend with less rapidity, the governor serving at all times to regulate the speed of the descending carriage and cause the same to move at a predetermined and equable rate of speed, so as to reach its lowest point without material noise, shock, or danger. When the conveyer leaves the rail L, the carriage returns to its normal position at the top of the columns L', so that the next conveyer may pass from the track A^{'''x} to said rail L.

The speed of the roller H' over the tracks A A^{'''} may be regulated by making the same of different diameters.

Each side of the store or different locality thereof may have its own line or track for sending the conveyer to the receiver, and in Fig. 12 a single track A is shown as employed for different counters; but in each case the returning-track A^{'''} is common to the entire store, the different counters being accessible therefrom by the turn-offs A^{'''x}, A^{'''x}, &c.

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

1. In a store-service apparatus, a hoisting device of the conveyer, consisting of pulley E, rope or chain F, and counter-weight cord or chain K, pulley K', and pulley K'', the slide or bracket and the post or column, substantially as and for the purpose set forth.

2. A rising and falling bracket or carriage having a rail, H, in combination with the main track A, having a section, A', which is moved by said bracket or carriage, and permits the rail H to be in communication with the main track, substantially as and for the purpose set forth.

3. The main track and a rail on a rising and falling bracket, in combination with a brake and a hanger or support for the main track, provided with means for automatically releasing said brake, substantially as and for the purpose set forth.

4. A rising and falling bracket or carriage, a rail supported thereon, and a pin or stud projecting therefrom, in combination with the elevated track, having an upwardly-movable section which is adapted to be struck by said pin or stud, substantially as and for the purpose set forth.

5. The bracket G, rail H, and brake-lever, in combination with the hanger having a pin

or-stud, B', substantially as and for the purpose set forth.

6. The rail H and brake-levers J'', in combination with the hanger provided with a throw-off pin and a stop for said lever, substantially as and for the purpose set forth.

7. The siding or turn-off, A''''x or A''''x, in combination with the rising and falling carriage L', provided with a rail, L, substantially as and for the purpose set forth.

8. The rail L on the rising and falling carriage, provided with a vertical guide, P, substantially as and for the purpose set forth.

9. The governor for the descending carriage, consisting of governor-arms, and an attached friction-disk, friction-wheels, gearing, and a connecting chain or rope, substantially as and for the purpose set forth.

10. The carriage L' and counter-weight, in combination with governor-arms, friction-wheels and a friction-disk, and gearing intermediate of said disk and carriage, substantially as and for the purpose set forth.

11. The carriage L', in combination with the chain, chain-wheel, gearing M' M'', disk N, governor-arms N', and friction wheels or pulleys N'', substantially as and for the purpose set forth.

12. The carriage L', having the track L, and a vertical guide, P, in combination with the abutment P', substantially as and for the purpose set forth.

13. The track A''''x or A''''x, rail L, vertical guide P, abutment P', and rail A''''', combined and operating substantially as and for the purpose set forth.

14. The track A''''x or A''''x, in combination with the stop-arm Q, lifting-arm Q', and carriage L', substantially as and for the purpose set forth.

15. In a store-service apparatus, a switch-rail vertically pivoted at one end, and supported on the other end by a swinging arm, substantially as described, whereby the superimposed weight of the conveyer shifts the switch-rail from the main track to the siding and the supporting-arm of the rail returns the same to its normal position, substantially as and for the purpose set forth.

16. In a store-service apparatus, a switch-rail, in combination with the main track and a siding and a supporting weighted arm, the end of said siding being lower than the adjacent end of the main track, substantially as and for the purpose set forth.

17. In a store-service apparatus, an elevated track, with a siding or turn-off, in combination with a switch-rail having a vertical pivot, an inclined swinging arm supporting said rail, and a gravitating latch, substantially as and for the purpose set forth.

18. The combination of a switch-rail having a vertical pivot and connected arm, and a hanger to which the rail is pivoted, the contiguous faces of said rail and hanger being inclined, substantially as and for the purpose set forth.

19. A switch-rail, in combination with a gravitating latch and the conveyer provided with a pin, substantially as and for the purpose set forth.

20. An elevated track having latches of different lengths, and conveyers having pins located at different heights, combined and operating substantially as and for the purpose set forth.

EMIL WERNER.

Witnesses:

JOHN A. WIEDERSHEIM,
A. P. GRANT.