

R. CHANDLER & C. F. AUTENRIETH.

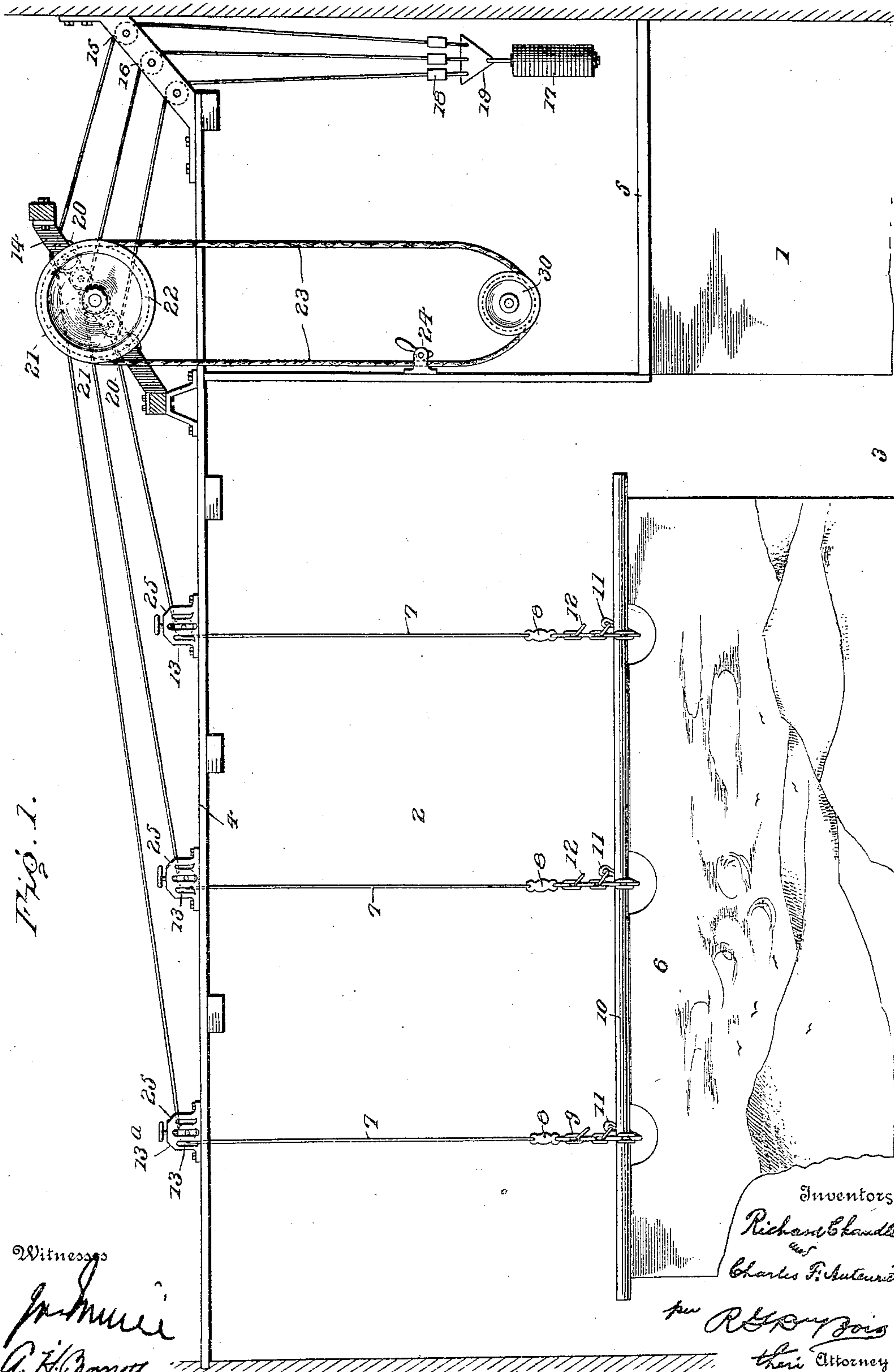
THEATRICAL APPLIANCE.

APPLICATION FILED JAN. 20, 1908.

943,651.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

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Fig. 2.

Witnesses
J. H. Bernard

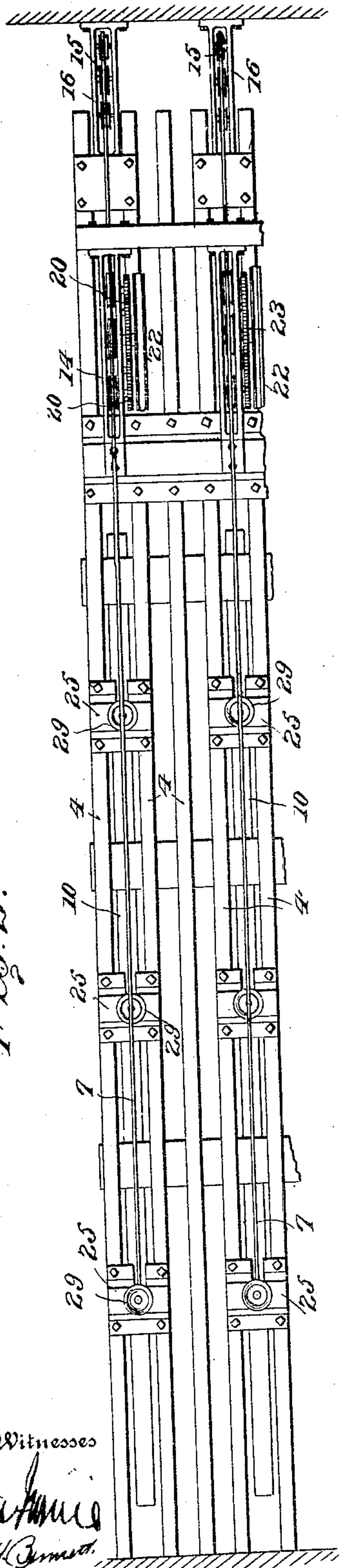


Fig. 4.

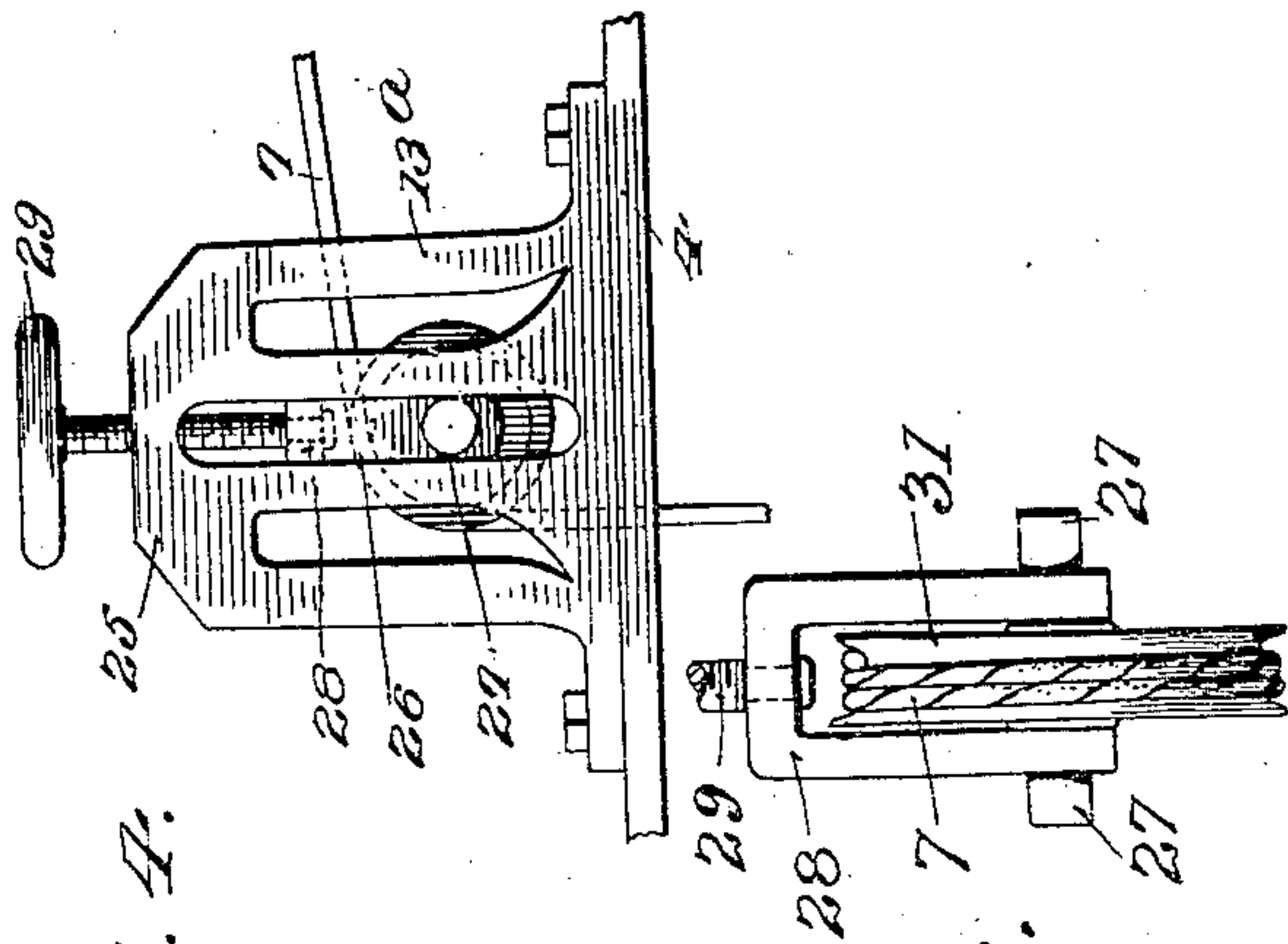


Fig. 3.

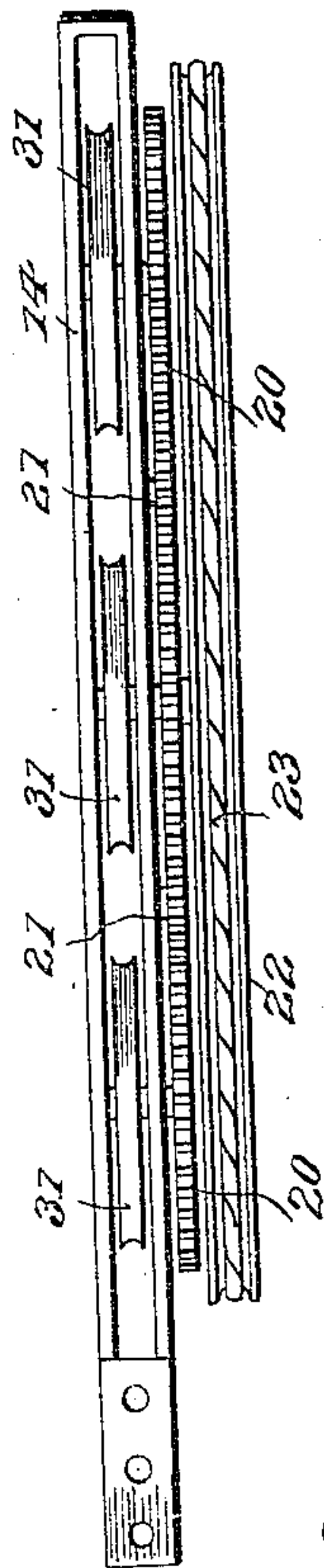


Fig. 6.

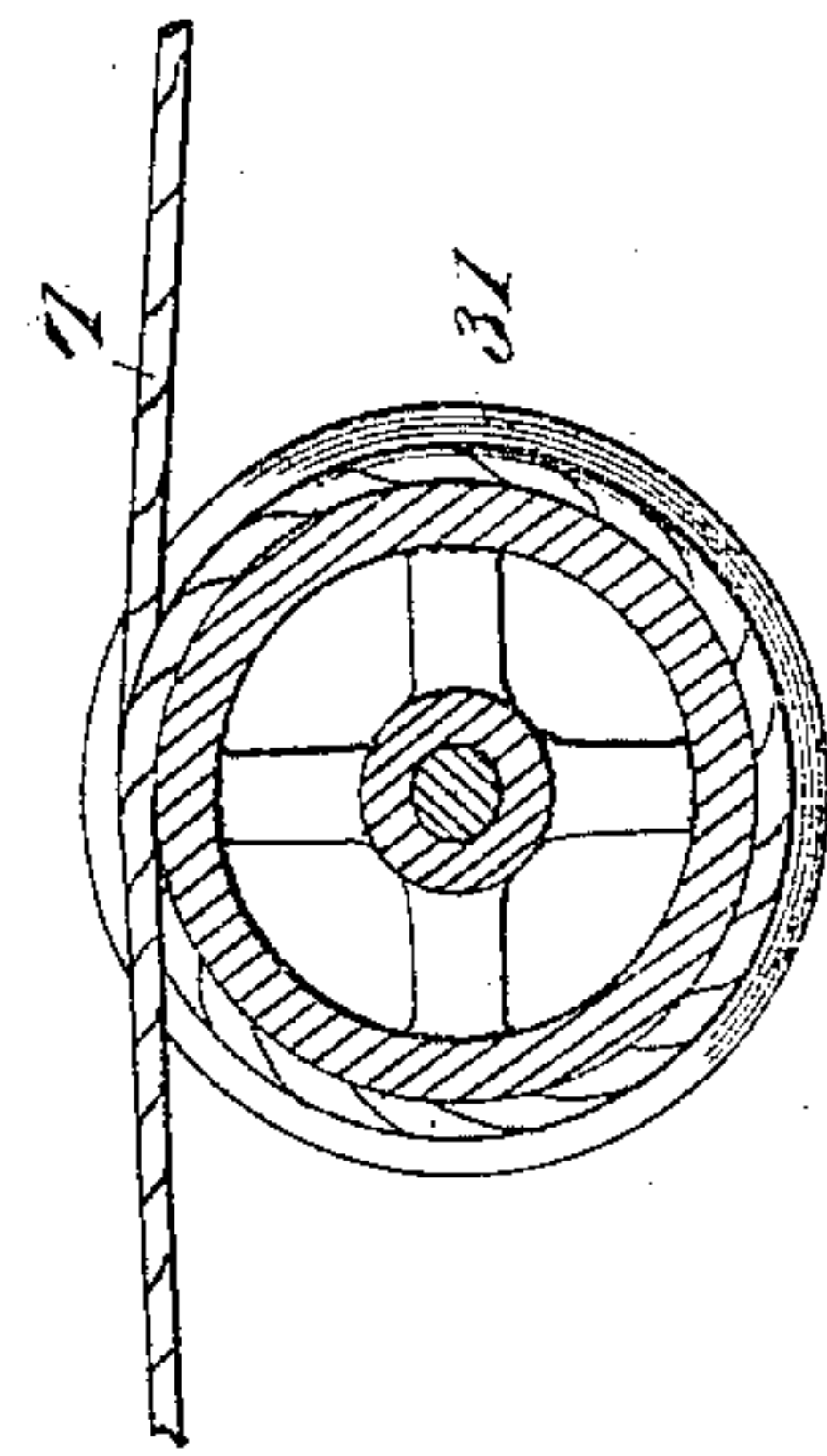


Fig. 5.

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UNITED STATES PATENT OFFICE.

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THEATRICAL APPLIANCE.

943,651.

Specification of Letters Patent.

Patented Dec. 21, 1909.

Application filed January 20, 1908. Serial No. 411,861.

To all whom it may concern:

Be it known that we, RICHARD CHANDLER and CHARLES F. AUTENRIETH, citizens of the United States, residing at Brooklyn, county of Kings, State of New York, have invented new and useful Improvements in Theatrical Appliances, of which the following is a specification.

This invention relates to those theatrical devices used for operating the drops or pieces of scenery suspended over the stage in the rear of the proscenium opening, which scenery is generally very heavy, and even when well counterbalanced, has heretofore required the muscular power of a gang of several men pulling together to raise, lower and adjust a single piece. Each drop is raised and lowered separately by means of several suspension ropes, usually attached at three or four equi-distant points along a horizontal supporting bar slipped into the top of each drop, whence they pass up and over sheaves or floor-blocks resting on the gridiron directly above the stage. From these floor-blocks, each set of ropes extends laterally to an overhanging head-block, or to a wall-block, both of which contain individual idle pulleys or sheaves for each rope, and thence from the wall-block they pass down to a common counterbalance hanging just above the platform at the side of the stage, where they are accessible to the flymen. A still further source of labor and inconvenience has been produced by the removal of the counterweights at the end of the run of a play. To prevent the latter from dropping suddenly when unchecked by the weight of the scenery placed side by side, it becomes necessary to remove all of the counterbalances. This labor usually occurs at mid-night when the scenery must be quickly removed and shipped, and is most arduous.

The purpose of our invention is to overcome the foregoing difficulties, and many others, and to produce a mechanism which will be much more simple in construction, require fewer men, occupy less space, cost less, and be safer and more desirable in other ways.

To these ends our invention consists in the peculiar features and combinations of parts more fully described hereinafter and pointed out in the claims.

In the accompanying drawings: Figure 1, represents a front view of our apparatus as

applied to a single drop or piece of scenery. Fig. 2, is a plan or top view showing a portion of the open-work floor or iron grid above the stage. Fig. 3, is an enlarged top view of our combined head block and rope driving mechanism. Fig. 4, is a detail view of an adjustable sheave and floor block. Fig. 5, is a sectional side view of a driving pulley. Fig. 6, is an end view of the same.

The reference numeral 1, represents the proscenium; 2, the fly-gallery; 3, the stage; 4, the gridiron over the stage; 5, the operator's or flymen's platform on the right above the stage, and 6, a fly, drop or piece of suspended scenery, all of which is a common arrangement for theaters. As there are thirty or forty drops, flies or pieces of scenery placed side by side in the average theater, and as the mechanism employed for each is substantially the same, we will therefore only describe our apparatus as applied to one.

In suspending a drop we employ three wire suspension ropes 7, the lower end of each rope being provided with a counterweight 8, and chain 9. This chain passes through a notch 6 and around a batten 10, in the top of the drop, and has on its free end a hook 11, adapted to take into a series of chain-rings 12, located a few inches apart throughout the length of the chain, whereby the chain can be quickly passed around the bar 10, and hooked into any one of the rings, to provide a coarse adjustment for taking up slack in the rope. Each rope passes up and over a bodily adjustable sheave 13, in a floor block 13^a, thence laterally to an overhead windlass or pulley driving mechanism arranged upon a headblock 14, where it makes one or two turns around the drum of one of the three pulleys 31 to form a bight and grip the pulleys; thence it extends to and over a sheave 15, in wall-block 16, and on down to a counterweight 17, the lower ends of the three ropes being attached to the counterweights through the medium of turnbuckles 18, and crowfoot 19.

The sheaves in ordinary headblocks are merely idle pulleys or anti-friction devices. Ours are just the reverse, each sheave gripping the rope and being converted into a driving member, and we have therefore termed them "driving pulleys."

We use substantially the same set of tandem pulleys as those in an ordinary head-block, each pulley being fixed to turn on

short journals, extending through the sides of the headblock. The journals of all three driving-pulleys are extended beyond one side of the headblock to receive gears 20, which
 5 operate all the driving pulleys in unison and in one direction through the intermediate idle gears 21. These driving pulleys are located intermediate of the opposite ends of the suspension lines, each of which is coiled
 10 entirely around its pulley. A large hand-operated master pulley 22, is fixed to the extended journal of the middle gear, and is worked by an endless rope 23, dropping down within reach of the flymen on platform 5. It is apparent that this big master-pulley can be applied, with the same results,
 15 to the axis of any other one of the gears in the series.

24, represents a fastener for the operating
 20 rope.

It should be explained that in the present instance each piece of scenery requires a set of three floor blocks and one headblock and one wallblock. Thus, if there are forty
 25 pieces of scenery, forty sets of floorblocks, headblocks and wallblocks are necessary. The horizontal depth of the fly gallery,—that is to say, the distance from the front to the back of the stage,—is necessarily limited
 30 so that the suspension lines cannot conveniently be spread out sidewise as they extend from the floorblocks to the headblocks, but must run one above and ahead of the other in tandem fashion. If they were placed
 35 side by side, there might not be room enough in the average gallery to accommodate them. We have, for greater convenience, used the word "tandem" to briefly describe the arrangement of the headblock pulleys, but to
 40 be more explicit, it should be said that the pulleys are placed in the headblock so that one will be above and slightly in advance of the other. This arrangement gives the necessary clearance to the ropes leading to
 45 and from the pulleys, spreading the ropes vertically instead of horizontally.

The adjusting mechanism of each floor block 13, Fig. 4, consists of a housing 25, mounted on the grid 4, and provided with
 50 vertical guide-slots 26. The sheave 13 is hung in this housing, so that the ends of its journal 27, pass through the vertical guide-slots 26, and into the lower ends of a U-shaped hanger 28, which is raised and
 55 lowered bodily with the sheave by a screw 29. The raising and lowering of the adjustable sheave will lift its rope vertically and will raise or lower the bend in that particular rope in relation to the other ropes to
 60 equalize the strain. Such adjustment can be easily and quickly made by a flyman on the grid, thereby obviating the necessity of changing the length of the rope at the terminal as in the old and common method. Thus
 65 with the coarse adjustment afforded by the

chains below, and the finer after adjustment by the sheaves above, the drop can always be trimmed with much greater facility.

Having attached and adjusted the ropes to the drop the operation of raising and
 70 lowering it is as follows:—The flyman pulling down on the right side of the hand rope 23, revolves the big master-pulley, and hence the middle driving pulley 15, in the direction of the hands of a clock, driving the rope
 75 coiled around the latter, the big counterbalance 17, on one side aiding and the smaller counterweight, chains and drop on the opposite side collectively resisting. A
 80 corresponding action and result is communicated to the other two driving pulleys through the medium of the intermediate gears 21. The bight or coil around the sheave of each driving pulley must be sufficient to grip the pulley and give the necessary
 85 friction to prevent the rope from slipping thereon during the revolution of the pulley and to hold the rope against slipping while the pulley is still. A proper prearrangement of counterweights will accomplish
 90 such result. Another valuable and practical advantage arising from interposing the drivers between the opposite ends of a hoisting rope is that only a slight resistance need be applied to the driver to prevent
 95 the heavier counterweight 17 upon the right from overcoming the lighter weight 8, at the opposite end of the rope when the drop is detached. It will be apparent that the friction grip of the bight in the rope
 100 around the drive-pulley 15 when the windlass is held still by the hand rope 3, added to the resistance of the small counterweight 8, will hold the ropes stationary against the pull of the opposite counterweight 17, thereby saving the necessity for removing weights
 105 from the latter when the drops are detached as in the appliances commonly used, and which we have before alluded to.

It should be understood that our driving
 110 pulleys are distinguishable from an ordinary windlass in that the rope winds off and on simultaneously.

A lower crank-pulley 30 may be used to
 115 actuate the endless rope 23.

We do not herein make claim to drop trimming means arranged along the grid and comprising several independently vertically movable supports from which the
 120 suspension lines depend, inasmuch as claims to said drop trimming means are included in our pending application S. No. 465,713, filed Dec. 2, 1908.

What we claim as new and desire to secure by Letters Patent is:—
 125

1. In a scenery manipulating mechanism, a plurality of counterbalanced lines or cables attachable to a single piece of scenery, in combination with a head block provided
 130 with a plurality of driving pulleys placed

one ahead of and slightly above the other, and a train of gears connecting said pulleys whereby all the lines and pulleys may be driven simultaneously and at the same speed.

2. In a theatrical apparatus, a headblock provided with a series of driving pulleys arranged one above the other, and counterbalanced suspension lines driven by the pulleys, in combination with a train of driving gears, and a master pulley geared to and actuating all of the gears.

3. In a theatrical apparatus, a headblock provided with a series of driving pulleys, and counterbalanced suspension lines driven by the pulleys, in combination with gears on the journals of said driving pulleys, intermediate idle gears, and a master pulley.

4. In a theatrical apparatus, a plurality of pulley-driven suspension lines attachable to a single piece of scenery, each of said lines being coiled entirely around so as to

simultaneously reel on and off and to grip its separate driving pulley, in combination with said driving pulleys and a counterweight for each line.

5. In a theatrical apparatus, a headblock provided with a series of driving pulleys, in combination with a plurality of individual suspension lines collectively attachable to a single piece of scenery each line being coiled around to wind on and off one of the driving pulleys, counterweights at the opposite ends of said lines, means for driving the pulleys, and means for adjusting the lines.

In testimony whereof, we have signed our names to this specification in the presence of two subscribing witnesses, this thirteenth day of January 1908.

RICHARD CHANDLER.
CHAS. F. AUTENRIETH.

Witnesses:

ROBT. D. ABELL,
GEO. A. HAVILAND.