

R. A. OGLE.

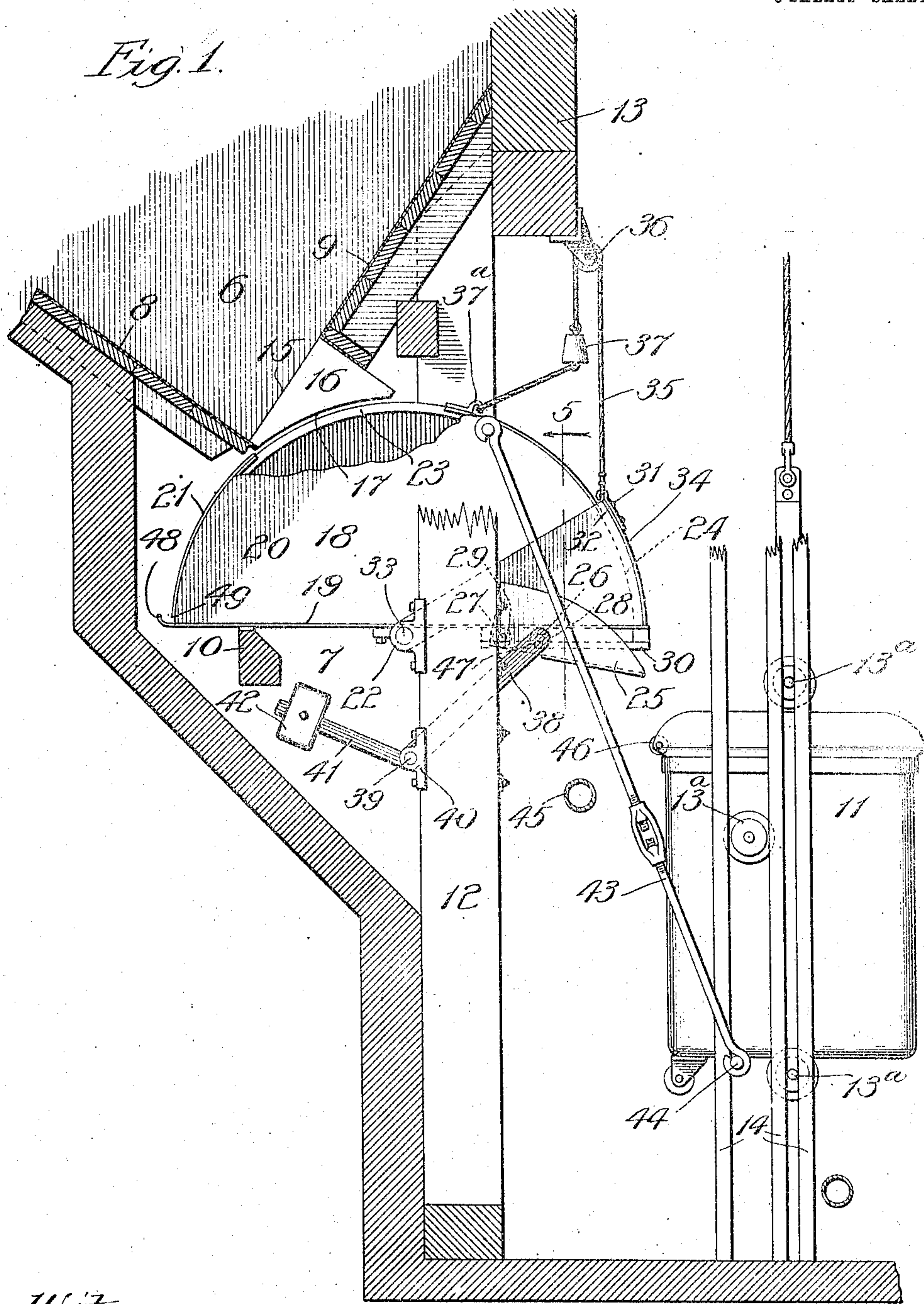
LOADER.

APPLICATION FILED MAY 18, 1908.

924,184.

Patented June 8, 1909.

3 SHEETS—SHEET 1.



Witnesses:

John Enders  
Chas. H. Ruell

Inventor:

Robert A. Ogle.

By Deane, Forth, Lee, Chittenden & Viles  
Attys.



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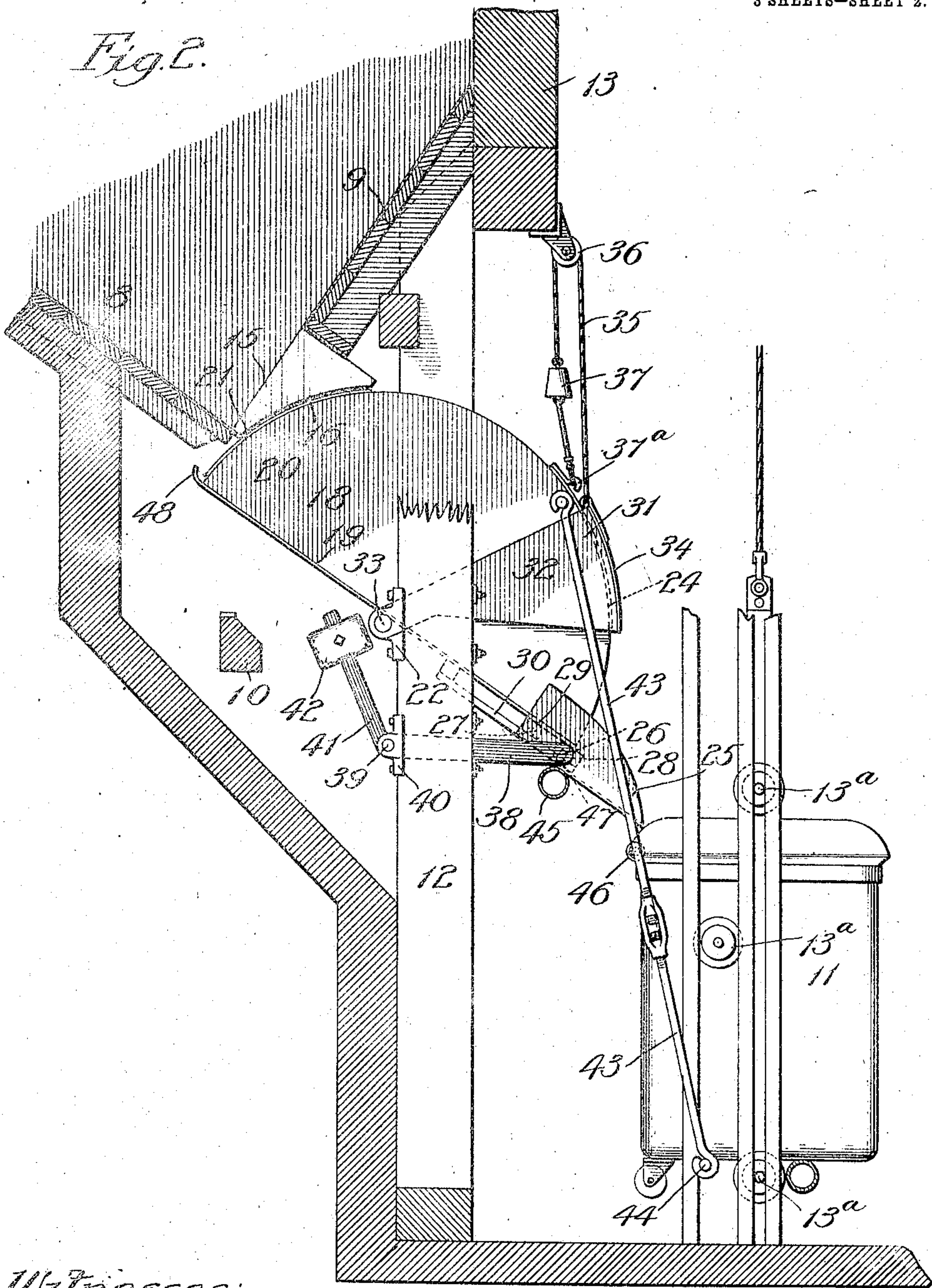
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3 SHEETS—SHEET 2.

*Fig. 2.*



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3 SHEETS—SHEET 3.

Fig. 3.

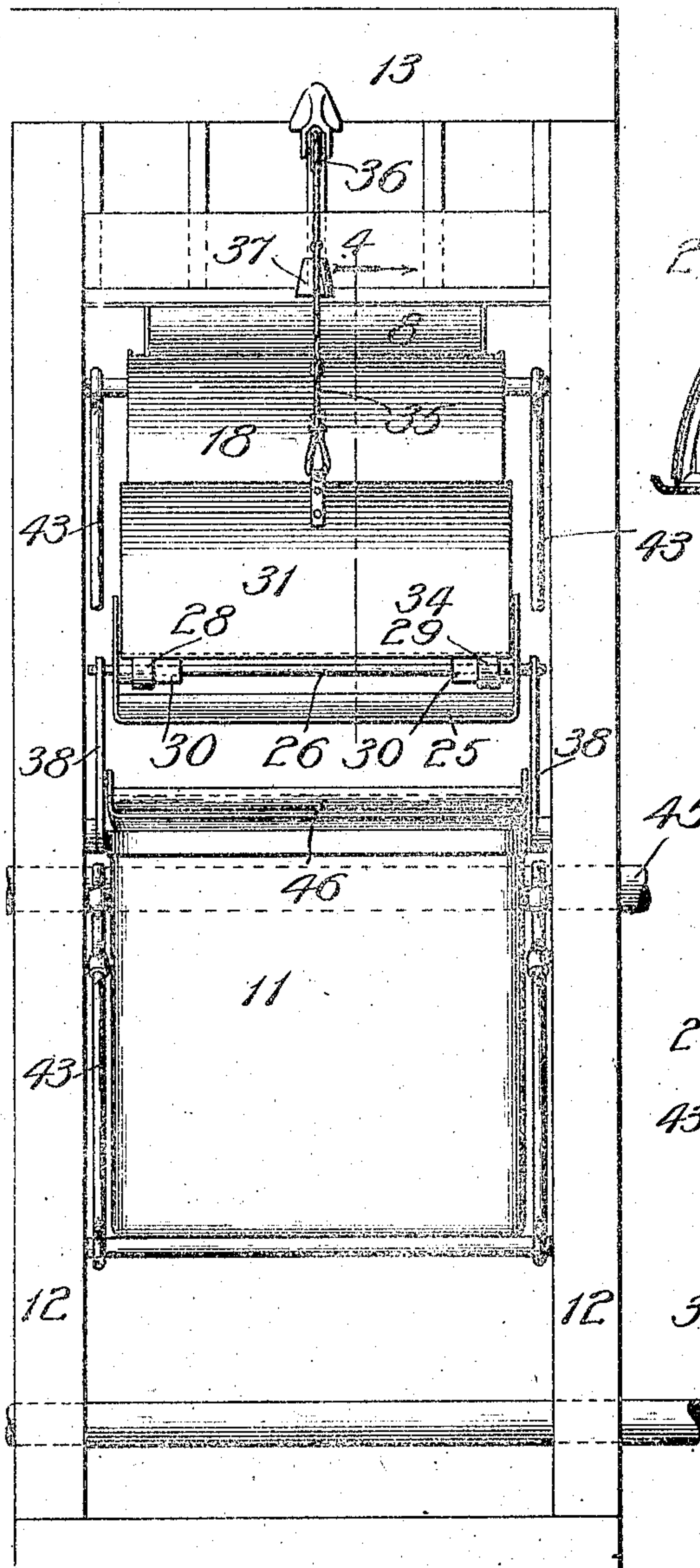


Fig. 4.

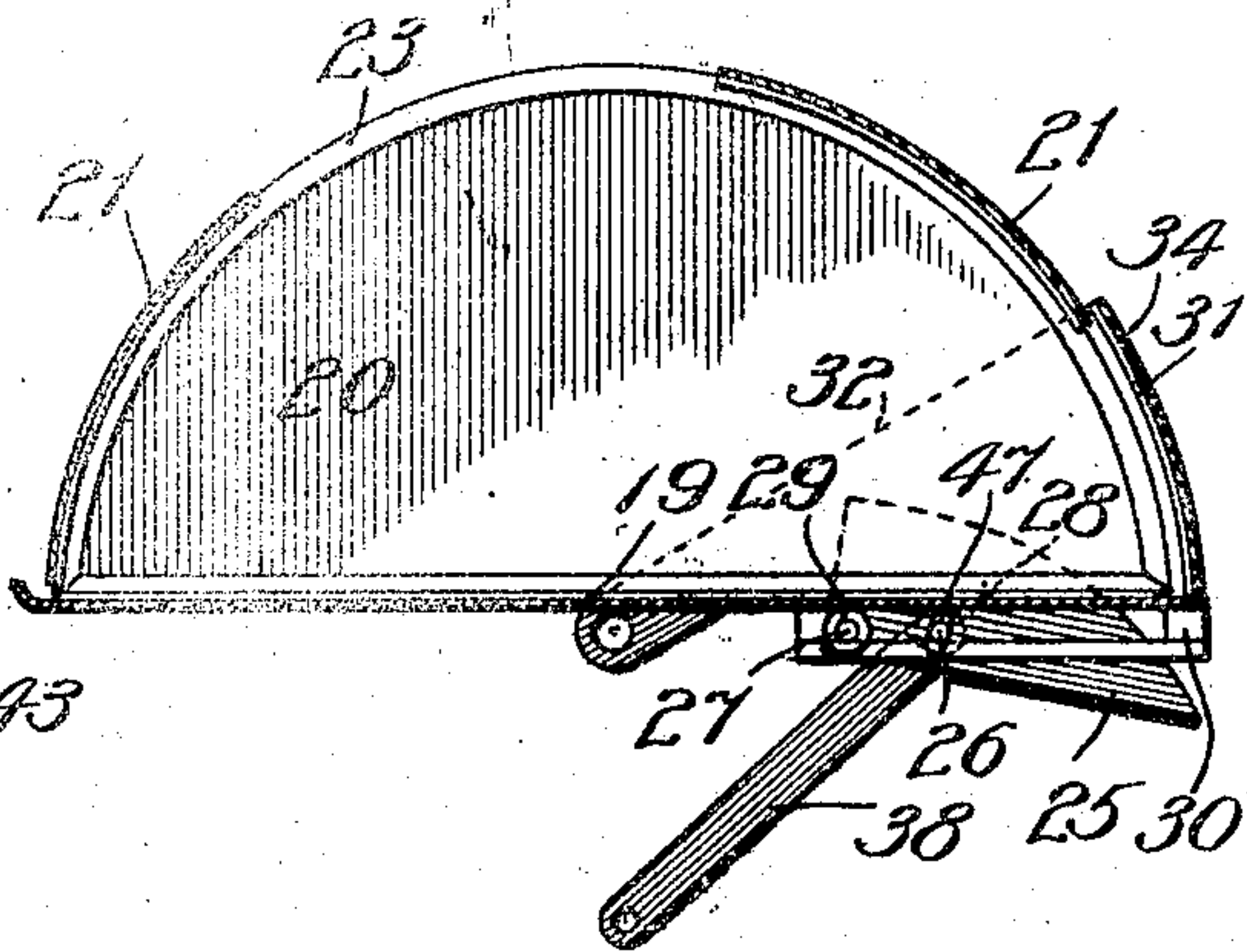
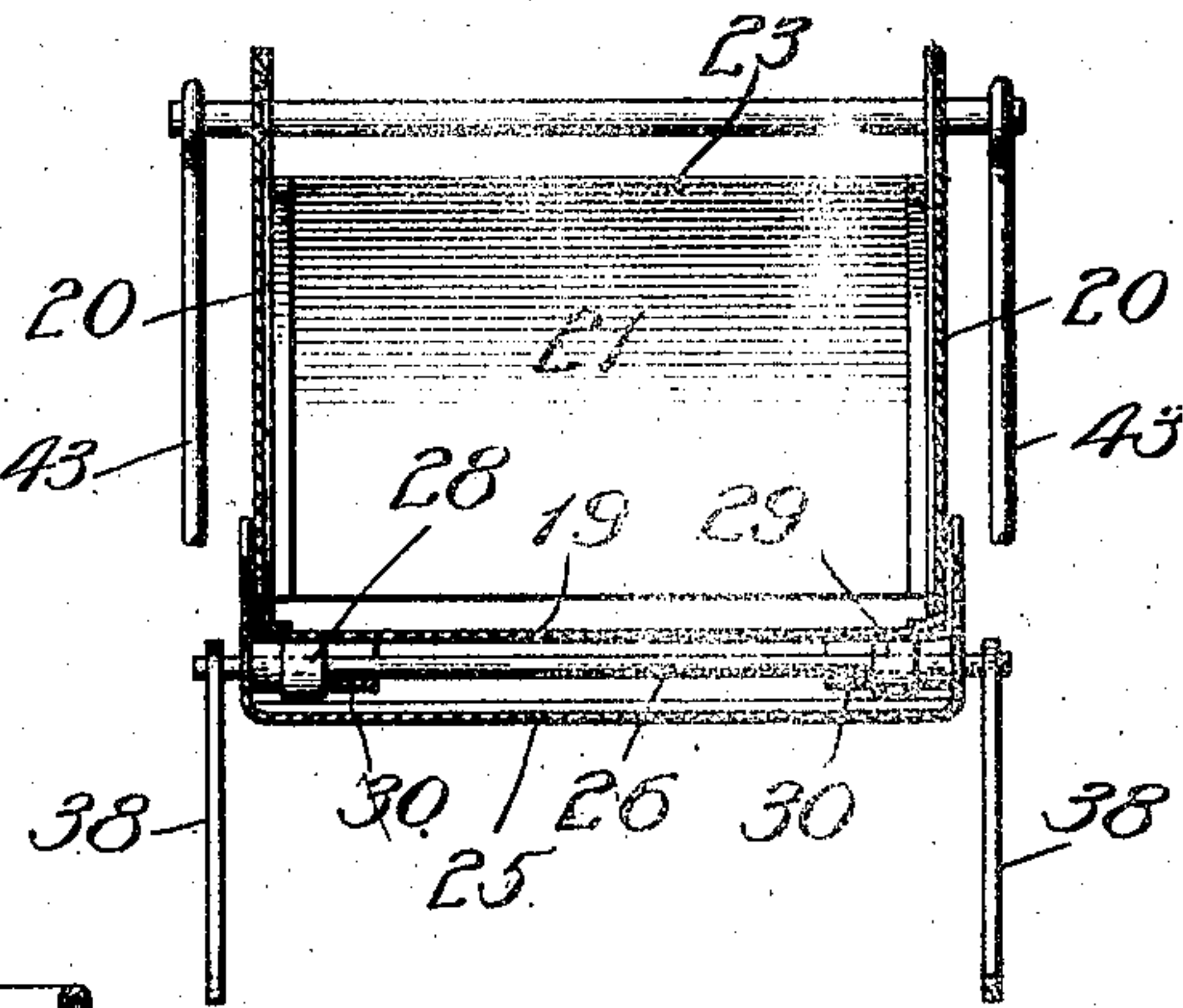


Fig. 5.



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# UNITED STATES PATENT OFFICE.

ROBERT A. OGLE, OF CHICAGO, ILLINOIS.

## LOADER.

No. 924,184.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed May 13, 1908. Serial No. 433,397.

*To all whom it may concern:*

Be it known that I, ROBERT A. OGLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Loaders, of which the following is a specification.

My invention relates more particularly to apparatus for elevating coal from a hopper to a receptacle to be loaded, as for instance a bin from which a supply of coal is furnished to a locomotive tender.

In coaling stations the hopper or chute for receiving the coal is preferably positioned below the level of the ground, that the tracks, on which the train from which the hopper is supplied, need not be elevated. The location of the hopper below the ground necessitates the provision of a pit adjacent to it, for permitting the lowering of a traveling bucket to a sufficient distance to allow coal discharged from the hopper to fill the bucket. In the construction hitherto provided the bucket was filled directly from the hopper, the coal being allowed to flow from the hopper into the bucket by operating a gate-valve with which the hopper is equipped. A serious disadvantage arising from these constructions is that the discharge-end of the hopper and the bucket, when the latter was in position for filling at the bottom of the pit, were in darkness with the result that the operator in operating the valve of the hopper would often not allow the coal to run sufficiently long to fill the bucket necessitating the relowering of the latter with loss of time, or the elevating of a short load; or on the other hand would be allowed to run too long causing the bucket to run over and depositing coal in the pit with the result of necessitating the difficult work of removing the spilled coal from the relatively deep pit. Another great objection to constructions as hitherto provided is that in the use of the manually-operated valve used they are apt to become clogged by the coal with the result of causing the pit to fill and if the bucket is in the pit at the time, burying it.

My primary object is to overcome the objections to constructions of this character as hitherto provided; and to produce a construction whereby the coal will be discharged from the hopper first with a loader and then into the bucket or other receptacle.

Referring to the accompanying drawings: Figure 1 is a view in elevation of coaling ap-

paratus constructed in accordance with my invention, the storage-bin and pit-wall being shown in sectional elevation, this view illustrating the loader-proper in its normal position, in which it fills, and the bucket in one of the positions it assumes intermediate the ends of its travel. Fig. 2 is a view like that of Fig. 1 showing the position the parts assume when the bucket reaches its lowermost position in the pit and the loader is operated to discharge its contents into the bucket. Fig. 3 is a view in front elevation of the apparatus of the preceding figures, the view representing the parts in the positions shown in Fig. 1. Fig. 4 is a view in sectional elevation of the loader and its apron mechanism; and Fig. 5, a section taken at the line 5 on Fig. 1, and viewed in the direction of the arrow.

The lower discharge-end portion of a hopper for coal or the like, is represented at 6, this hopper being preferably arranged below the level of a railway-track (not shown) to permit the coal, or other material, to be dumped into the hopper directly from cars on the track. The hopper is so constructed as to afford a space 7 immediately below the lower ends of the conveying floors 8 and 9 with a cross-timber 10 extending entirely across this space. This space 7 opens into the pit in which the bucket 11, hereinafter described, is operated. Located between the space 7 and the pit are vertical uprights 12 adjacent and secured to a wall 13 of the hopper 6. The bucket 11 for receiving coal from the hopper and elevating it to the surface to dump it into a receptacle for receiving it, has rollers 13<sup>a</sup> on its sides which operate in vertical guides 14 for guiding the bucket in its movements, the bucket shown being of the ordinary form with an open top. The lower end-portion of the floor-section 9 is cut away to form an outlet 15 in which a chute-section 16 having curved outer edges as indicated, at 17 is located.

Loading mechanism for receiving a predetermined amount of coal is located intermediate the outlet 16 and bucket. The loader is in the form of a semi-cylindrical receptacle 18 having a flat bottom 19, sides 20 and an inclosing wall 21. The receptacle is pivoted at its opposite sides at points equidistant between its ends to the opposed uprights 12, as indicated at 22, to enable the receptacle to be rocked endwise. The wall 21 contains an opening 23 from side to side which in the po-



sition of the receptacle as represented in Fig. 1 registers with the outlet 16 from the hopper and in the position represented in Fig. 2 is out of registration with it. The wall 21 also contains a discharge opening 24 and supported on the receptacle adjacent to this opening is a sliding apron 25. This apron is of U-shape, the sides of which embrace the sides 20 of the receptacle 18 and support two spaced rods, 26 and 27, carrying rollers 28 and 29 respectively, the rods extending between guides 30 on the receptacle 18 and the bottom 19 of the latter, and the rollers 28 and 29 bearing against the underside of the receptacle, thus permitting the apron to be moved longitudinally of the receptacle 18.

The opening 24 is controlled by a gate 31 which comprises the side-plates 32 journaled at their inner ends on the rods 33 and united at their outer ends by a curved plate 34 which is so located and is of such a size as to adapt it to completely close the opening 24 in the receptacle when the loader is in the position hereinafter described. The gate is connected to the lower end of a cable 35 which extends over a pulley 36 and connects at its opposite end to a hook 37<sup>a</sup> on the loader-wall 21, a weight 37 being secured to the cable between the hook 37<sup>a</sup> and pulley 36. The normal position of the receptacle 18 is that illustrated in Fig. 1 in which it extends preferably horizontally, its opening 23 registering with the discharge opening 16 in the hopper, its gate 31 closed, and the apron 25 withdrawn, by reason of its connection at its rod 26 with the links 38 fastened to the opposite ends of a rod 39 journaled in brackets 40 on the uprights 12, levers 41 being secured to the links 38 and carrying adjustable weights 42, whereby the tendency of the weights is to tilt the rods 38 upward and withdraw the apron. In the normal position of the receptacle 18 as described the coal flows from the hopper into the receptacle approximately filling it.

The receptacle 18 in the construction shown is adapted to be automatically dumped to discharge its contents into the bucket 11, this function being accomplished by two rods 43 pivoted near their upper ends to the sides of the receptacle 18 and at their lower ends connected with a cross-bar 44 which is caused to extend into the path of the bucket 11 by confinement between the members of the bucket-guides 14. Thus as the bucket nears the limit of its descent it engages with the bar 44, drawing down the rods 43, and thereby tilting the receptacle to the position illustrated in Fig. 2. As the receptacle swings on its pivots, the coal discharged into it while in normal position, flows toward its outer end and the remaining unfilled space in the receptacle is filled by the continued flow of coal in to it so long as the outlet 16 remains open. By the time the

outlet 16 closes the receptacle has filled and has been swung to discharge position. The swinging of the receptacle also operates to raise the gate 31, the slack in the cable 35 being sufficient to cause the gate to be raised to completely uncover the outlet 24 by the time the receptacle has swung to discharge position, the effect of running the cable 35 over the pulley 36, as described, causing the gate, when it starts to rise, to move twice as fast as the receptacle 18, and thus the gate need not be constructed so as to start to rise until the receptacle has swung to within a short distance of its lowermost position. As the receptacle swings downward at its discharge-end the links 38 are caused to tilt downward at their upper ends thus causing the apron 25 to be forced beyond the lower end of the receptacle 18 to the position illustrated in Fig. 2, in which the apron and receptacle rest against a stationary cross-bar 45 secured in the walls of the structure. The raising of the gate-valve 31 permits the coal to freely dump from the receptacle 18 into the bucket 11, which thus filled, is raised in any suitable manner. As the bucket 11 rises a roller 46 thereon engages with the outer protruding end of the apron 25 and tilts the receptacle 18, backward toward its normal position, the opening 23 being so located, as described, as to cause coal to begin to flow into the receptacle 18 as soon as it has been moved a slight distance, the coal thus falling upon the bottom of the receptacle to the left of the center of gravity in Fig. 2, causing the receptacle to quickly complete its movement to normal position in which it rests at its rear end on the cross-beam 10. The swinging of the receptacle to normal position causes the gate 31 to close, the weight 37 merely being heavy enough to cause the slack in the cable 35 to extend between the pulley 36 and the hook 37<sup>a</sup>, and thus the cable 35 is prevented from becoming tangled with the bucket 11. The tilting of the receptacle to normal position also causes the links 38 to be rocked to the position indicated in Fig. 1, thereby moving the apron 25 to a position in which it does not extend into the path of the bucket 11. The provision of the weight 42 serves to assist in turning the receptacle from its dumping position to normal, filling position and also aids in overcoming the great weight on the outer end of the receptacle when turning to dumping position. To avoid possible damage to the loader-mechanism should it extend in discharging position when the bucket is moving downward, I slot the sides of the apron, as indicated at 47, and thus the apron will be caused to yield downwardly at its outer end when so engaged by the bucket and the latter may move to its lowermost position without doing any damage.

To avoid the leakage of coal, especially the



fine particles or small lumps thereof from the hopper, to the pit during the rocking movements of the receptacle 18, I provide a lip 48 extending across the rear end of the receptacle, and slot the wall 21, as indicated at 49, thus any coal escaping between the wall 21 and the outlet 16 falls upon the lip and passes into the receptacle 18.

By thus providing the loader intermediate the hopper and bucket, it is impossible to open the bin to cause it to discharge its contents into the pit, as described of previous constructions; and it is also impossible to overload or underload a bucket. Another decided advantage which is afforded by my invention is that of enabling the buckets to be rapidly filled, as the operator is not called upon to use his discretion in filling the buckets as in the manner described of prior construction, the operation of my improved mechanism being entirely automatic. Furthermore as the loader receives a predetermined amount of coal, its discharge 24 may be made considerably larger than the outlet of hopper could practically be in constructions as hitherto provided, and thus the bucket may be loaded very quickly.

By constructing apparatus of the character set forth in accordance with my invention, the material to be transferred resting normally in the loader after filling, is caused to shift in the loader as soon as the latter begins to tilt and produces a movement of the material through the bin-outlet during the operation of moving the loader from normal to dumping position, and thus the portion 21 of the receptacle, acting as an undercut gate, readily moves through the flowing material, thereby avoiding danger of obstruction to the movement of the loader by lodgment of the material between the portion 21 and the bin-outlet.

While I have illustrated and described my invention as applied to a coaling station, I do not intend to limit it to its use in this connection but desire to protect it in its application to any system to which it may be applicable involving the transferring of material from a hopper, bin, or the like, to conveyer receptacles.

While I have shown and described the means for controlling the supply to the loader as a part of the latter, namely its wall 21, I do not wish to be understood as limiting my invention to such means as so far as certain of its features are concerned, any other means for controlling the supply to the loader may be employed.

What I claim as new and desire to secure by Letters Patent is—

1. In apparatus of the character set forth, the combination with a bin, or the like, of a loader in the form of a receptacle open to the admission into it and the discharge therefrom of material from the bin, and adapted

to be moved from filling to discharge position and in such movement to cut off the flow of material from the bin, the receptacle being so constructed and arranged as to cause material discharged therein from the bin to shift its position as the receptacle moves and while the bin-outlet is open, in a manner to cause the material to flow through the bin-outlet as the latter is closed.

2. In apparatus of the character set forth, the combination with a bin, or the like, provided with an outlet, of a loader in the form of a semi-cylindrical receptacle, affording a single chamber, journaled between its ends and containing an inlet and an outlet on opposite sides of its journals and adapted in one position to register with said bin-outlet for the filling, together with means for closing said bin-outlet when said loader-inlet is out of register.

3. In apparatus of the character set forth, the combination with a bin, or the like, provided with an outlet, of a loader in the form of a semi-cylindrical receptacle, affording a single chamber, journaled between its ends and containing an inlet and a valved outlet on opposite sides of its journals and adapted in one position to register with said bin-outlet, together with means for closing said bin-outlet when said loader-inlet is out of register therewith.

4. In apparatus of the character set forth, the combination with a bin, or the like, provided with an outlet, of a loader in the form of a semi-cylindrical receptacle, affording a single chamber, suitably journaled to permit it to be rocked and containing an inlet and an outlet on opposite sides of its journals, the loader being constructed and arranged to close the bin-outlet when moved from filling to dumping position.

5. In apparatus of the character set forth, the combination with a bin, or the like, provided with an outlet, of a loader in the form of a semi-cylindrical receptacle, affording a single chamber, suitably journaled to permit it to be rocked and containing an inlet and a valved outlet on opposite sides of its journals, the receptacle being constructed and arranged to close the bin-outlet when moved from filling to dumping position.

6. The combination of a bin, or the like, having an outlet, of a loader in the form of a receptacle open to the admission into it and the discharge therefrom of material in the bin and constructed and arranged to permit it to be moved from filling to dumping position and in such movement to close the bin-outlet, and a lip on the receptacle with an opening in the wall of the loader at a point adjacent to said lip, the lip being so disposed as to receive dust and particles of the material dropping from the bin between the latter and the receptacle, for the purpose set forth.



7. The combination of a bin, or the like, having a curved outlet, of a loader in the form of a semi-cylindrical receptacle having an inlet and journaled in a manner to permit it to be moved into filling position and rocked to dumping position, and a lip on the rear end-portion of the loader connecting with the interior thereof, for the purpose set forth.
8. The combination with a bin, or the like, and conveying mechanism, of a loader supported in a manner to adapt it to be moved and constructed and arranged to be filled while in one position and discharge into the conveying mechanism when moved into another position, a movable apron for the loader adjacent to its outlet constructed and arranged to be projected beyond the loader and withdrawn from such projecting position, and means for moving the apron, for the purpose set forth.
9. The combination with a bin, or the like, and conveying mechanism, of a loader supported in a manner to permit it to be rocked, and constructed and arranged to fill from the bin in one position and discharge into the conveying mechanism when moved into another position, an apron slidably mounted on the loader, and means operating in the movements of the loader to alternately project and retract the apron with relation to the outlet end of the loader, for the purpose set forth.
10. The combination with a bin, or the like, and conveying mechanism, of a loader journaled in a manner to permit it to be filled from the bin in one position and be moved for dumping it into the conveyer mechanism, rods connected with the loader, and a cross-bar connecting the lower ends of said rods and extending into the path of the bucket, for the purpose set forth.
11. The combination with a movably supported receptacle containing an opening, of a valve for said opening, a cable connected with said valve at one end and relatively fixed at its opposite end, a pulley supporting the cable intermediate its ends and a weight on the cable intermediate the pulley and its fixed end, the cable being of a length less than twice the distance of movement of the receptacle at the said opening, whereby the gate is caused to be alternately opened and closed in the movements of the receptacle in opposite directions.

ROBERT A. OGLE.

In presence of—

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R. A. SCHAEFER.