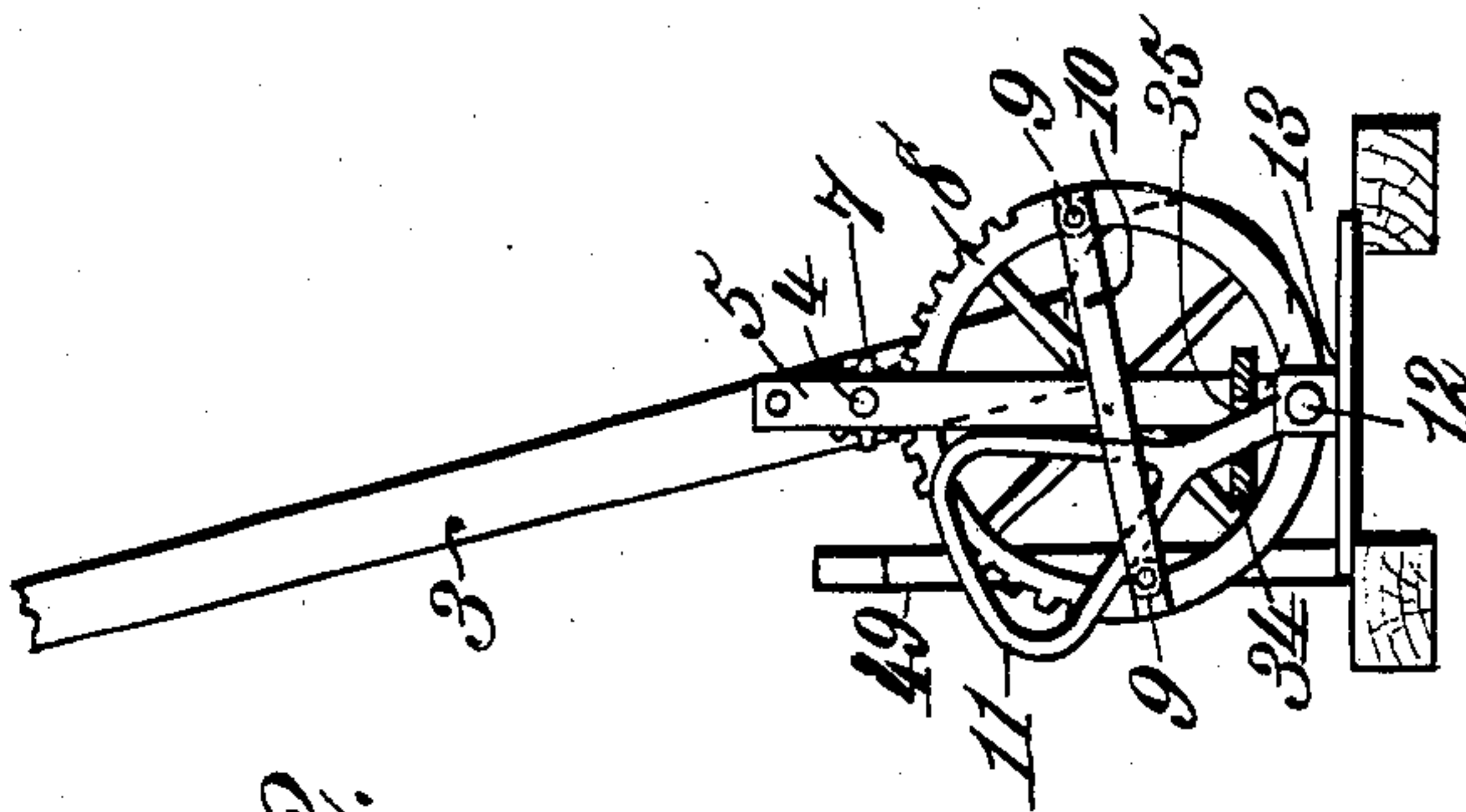
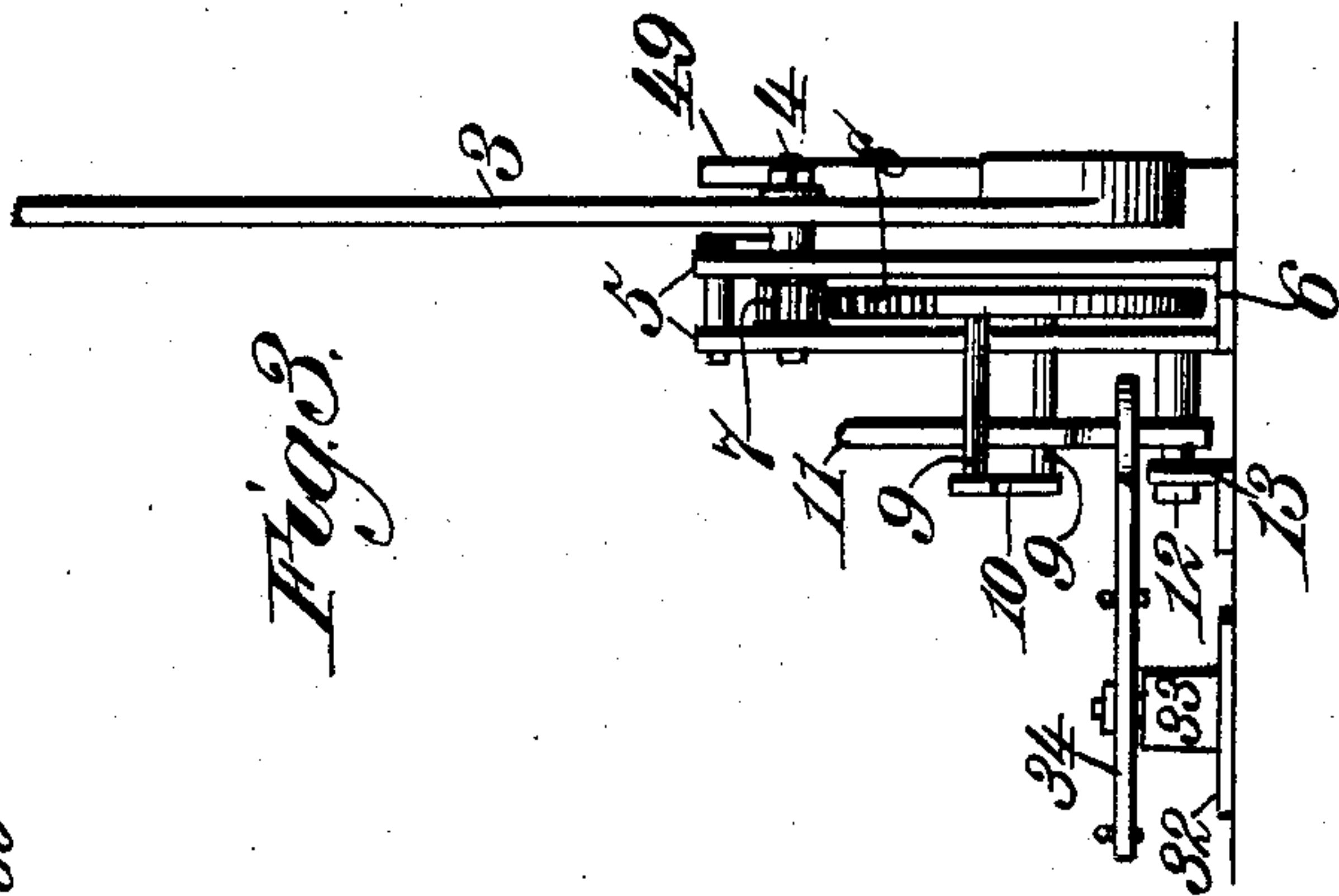
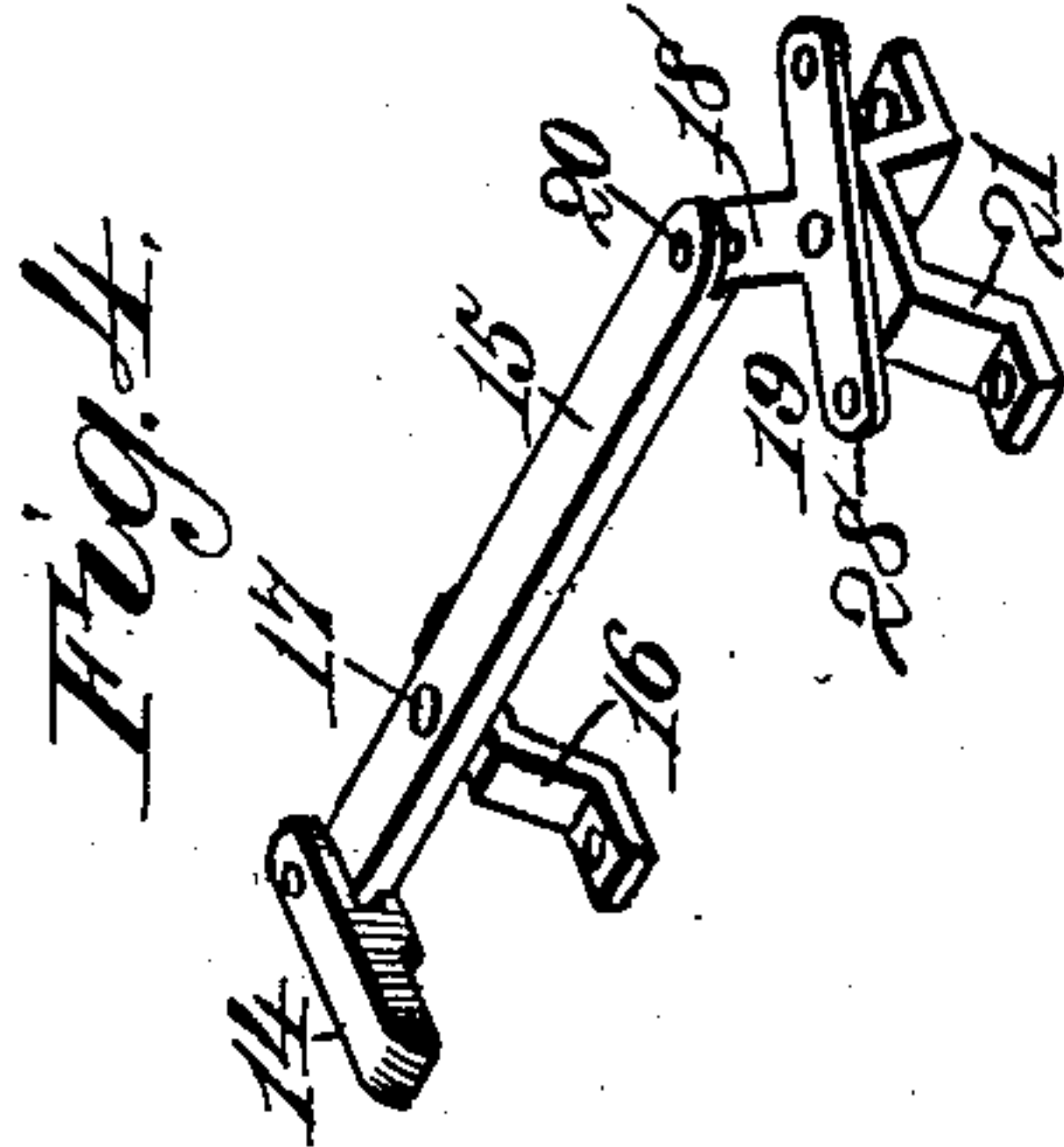
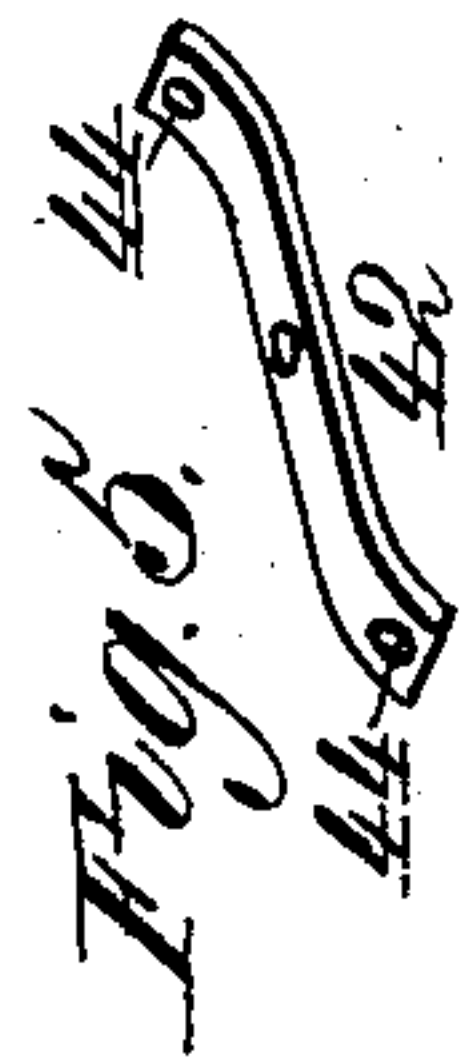
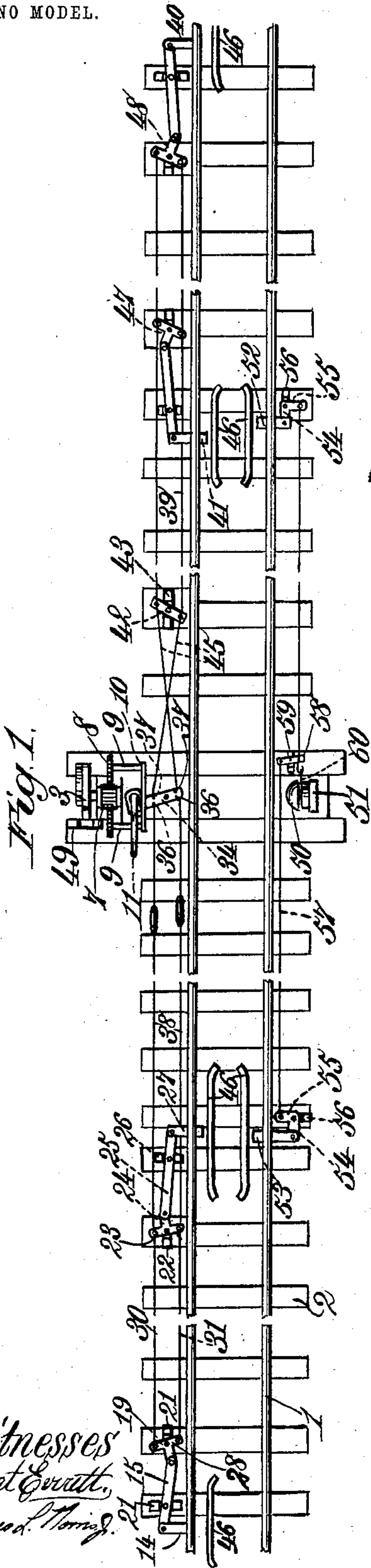


No. 753,676.

PATENTED MAR. 1, 1904.

C. W. CURD.
AUTOMATIC RAILWAY GATE.
APPLICATION FILED AUG. 1, 1903.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

CALVIN WINN CURD, OF BOWLING GREEN, KENTUCKY.

AUTOMATIC RAILWAY-GATE.

SPECIFICATION forming part of Letters Patent No. 753,676, dated March 1, 1904.

Application filed August 1, 1903. Serial No. 167,933. (No model.)

To all whom it may concern:

Be it known that I, CALVIN WINN CURD, a citizen of the United States, residing at Bowling Green, in the county of Warren and State of Kentucky, have invented new and useful Improvements in Automatic Railway-Gates, of which the following is a specification.

This invention relates to automatic railway-gates.

The object of the invention is in a ready, simple, thoroughly feasible, and positive manner to effect lowering and raising of a railway-gate, the former movement being effected in advance of the passage of a train across a roadway and the latter after the train has passed such roadway; furthermore, to effect sounding of an audible signal to give warning to an approaching vehicle or foot passenger when a train is about to cross the roadway or track.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of an automatic railway-gate, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, there is illustrated one form of embodiment of the invention as applied to a single-track railway, it being understood that the improvements may by duplication of the parts be adapted to a double railway-track.

In the drawings, Figure 1 is a view in plan of the complete system. Fig. 2 is a view in side elevation. Fig. 3 is a view in end elevation. Fig. 4 is a perspective detail view of a part of the mechanism. Fig. 5 is a similar view of another part of the mechanism.

Referring to the drawings, 1 designates a track-section, which may be of any desired length, and 2 the cross-ties connecting the rails. As the tracks and cross-ties may be of the usual or any preferred construction, further description thereof is deemed unnecessary.

The present invention resides, first, in the novel form of mechanism for operating a railway-gate, and, second, in a novel form of mechanism for operating an audible signal, in this

instance a bell, both mechanisms being operated by the wheels of a passing train. At this point it may be stated that the invention herein illustrated is adapted particularly for use in connection with a single-track railway and is therefore operable from both directions.

The gate 3 may be of the usual or any preferred construction and, as usual, is poised—that is to say, is equally balanced upon its support—thus to reduce the power necessary to operate it to the minimum. The gate is supported upon a shaft 4, journaled in the upper portion of two standards 5, the lower ends of which are provided with base-pieces 6, which are secured to the cross-ties in any suitable manner, as by being bolted or spiked thereto. Upon the shaft 4 is a pinion 7, which meshes with a large gear 8, also journaled in suitable bearings in the standard, the proportion between the diameters of the pinion and gear being such that a relatively small rotation of the gear will produce an extended range of movement of the pinion. The gear 8, which constitutes the actuating element for the gate, may be a sector and still be within the scope of the invention. Projecting at right angles to the rim of the gear 8, and preferably in diametric alinement, are two arms 9, which in order to prevent spreading are connected by a brace-plate 10.

The means for rotating, or rather oscillating, the gear 8 comprises a vibratory rocking lever 11, which may be of any preferred construction and is mounted upon a shaft 12, one end of which is journaled in one of the standards 5 and the other end in a bearing 13; which is secured in any suitable manner to the cross-ties. As shown, the sides of the rocking lever constitute cams, which by contacting with the arms 11 operate to impart a slight rotative movement to the gear 8, and thus through the medium of the pinion 7 cause the raising and lowering of the gate 3, according to the direction of movement of the lever. It will be understood, of course, that, if preferred, the direct impact between the sides of the rocking lever and the arms 9 may be relied upon for operating the gear 8; but in order to produce friction to a minimum, and thus facilitate the operation of the device, it is preferred that

there should be the cam action above referred to between the lever and the arms. The mechanism for operating the gate from both ends of the track-section is identically the same, so that a description of one will serve for both. At any preferred distance from the gate that will insure the passage of a long train over the track before the engine reaches the gate is arranged a slide 14, one end of which projects through an opening in a web of the rail and has the inwardly-projecting end beveled or rounded to insure its lateral displacement when contacted by the flange of a wheel. The portion that projects through the web of the rail is of less vertical diameter than the remainder of the slide, thus presenting a shoulder to limit its inward movement. The outer end of the slide is bifurcated, and in the bifurcation is pivoted one end of a lever 15, the fulcrum of the lever being upon a bracket 16, secured in any suitable manner upon one of the cross-ties and disposed at the proper distance from the rail to insure the requisite vibration of the lever to perform the function for which it is designed. The bracket may be made of any suitable material, preferably a solid casting of iron, and the fulcrum 17 may be a bolt seated within the bracket. The free end of the lever or that opposite the slide 14 is horizontally bifurcated, and within the bifurcation is pivoted one member 18 of a three-armed lever 19, the member 18 being provided with an elongated opening to receive the fulcrum pin 20, thus to permit the proper vibration of the lever 15. The lever 19 is fulcrumed upon the bracket 21, which may be of the same construction as the bracket 16, and is suitably secured to one of the cross-ties of the track-section. On a cross-tie adjacent to the bracket 21 is a similar bracket 22, and upon this bracket is fulcrumed a three-armed lever 23, one member, 24, of which is pivotally connected in the same manner as the member 18 with a lever 25, fulcrumed upon a bracket 26, the end of the lever opposite the lever 23 being pivoted in the bifurcated end of a slide 27, similar to the slide 14, which projects in the same manner through the web of the rail. The members 28 of the lever 19 and like members of the lever 23 are connected by wire ropes or chains 30 and 31, by which arrangement it will be seen that when the lever 15 is rocked simultaneous rocking movement in like directions will be imparted to the three-armed levers 19 and 23. Between the ties supporting the standards 5 is secured a plate or casting 32, projecting upward from which is a stud 33, fulcrumed upon which intermediate of its ends is a plate or lever 34, the outer end of which is provided with a transverse slot, through which projects the shank of the rocking lever 11, as clearly shown in Fig. 1. At points equidistant from the fulcrum of the lever 34 and on each side

thereof are pairs of openings 36 and 37, the pair of openings 36 being engaged by one end of a pair of wire ropes or chains 38, the other ends of which are connected with two of the arms of the lever 23. The arrangement of the levers, slides, and the other parts of the mechanism on the opposite side of the gate is the same as that already described, except the manner of transmitting the motion from the wire ropes or chains 39 (the equivalent of the wire ropes or chains 38) to the plate or lever 34. The means for transmitting the motion from the wires or ropes 39 to the plate or lever 34 comprises a plate 42, fulcrumed intermediate of its ends upon a bracket 43 and having one of its terminals bent upward and the other bent downward, the said terminals being provided with openings 44, in which are secured the free ends of the ropes or chains 39. Secured in the openings 44 of the plates 42 are wire ropes or chains 45, which are crossed, as shown in Fig. 1, and have their free terminals secured in the openings 37 of the plate or lever 34.

While not herein shown, it is to be understood that the operating mechanism of the gate—that is to say, the gear, pinion, and rock-lever—may be inclosed in a suitable casing, as usual, and that the operating ropes or chains connecting the various levers with the plate or lever 34 may be inclosed in tubes or pipes, thus to protect them from the elements and also from the possibility of damage by being tampered with or by being run over by heavy-loaded vehicles. The levers connecting the slides with the three-armed levers may also be covered by a board casing, if found necessary or desirable.

All of the parts so far described are arranged close to the ground and are thus not liable to damage, and are further capable of ready repair in case of damage.

Arranged adjacent to each of the slides is a guard-rail 46, the terminals of which are curved in the same direction, as usual, and are adapted to cause the flange of a car-wheel positively to impinge against the slide opposite which it is disposed, and thus insure its operation.

The operation of the mechanism so far described is as follows: A train approaches from, say, the left-hand end of the track-section. The flanges of the wheels of the locomotive will first impinge against the slide 27, and the latter is thrown outward, thereby rocking the lever 25 and turning the three-armed levers 19 and 23 and causing the slide 14 to be projected inward. As the slide 27 is forced outward the plate or lever 34 through the medium of the wire ropes or chains 30 and 31 is rocked upon its fulcrum, thereby throwing the rocking lever to one side, which causes it to engage one of the arms 9, and thus turn the gear 8 and through the medium of the pin-

ion 7 lower the gate. During this operation the bolt 41 is thrown out of the path of travel of the wheel-flanges, so that it becomes dead, and the slide 40 is thrown inward, and after 5 the train has passed the crossing at which the gate is located the flanges of the engine-wheels impinge the slide 40 and force it outward, the slides 40 and 14 being arranged at a distance from the gate sufficient to accommodate the 10 longest train that will ever pass over a track. As the slide 40 is forced outward the three-armed levers 47 and 48 are rocked and through the wire ropes or chains connecting them with the plate or lever 34 throws the lever in 15 the opposite direction, and thereby causes the gate to rise. In order to limit the downward movement of the gate, a stop 49 is employed in the nature of an arm, the upper end of which is forked to receive the gate-arm, said stop 20 being secured in any suitable manner to the cross-ties supporting the gate-operating mechanism.

As it is essential that an audible signal should be provided which will sound continuously 25 before the engine approaches the crossing, a bell 50 is employed for this purpose, which is supported upon a suitable standard 51, arranged opposite the gate. The bell is operated from both ends of the track-section 30 through the medium of slides 52 and 53, the ends of which project through the web of the rail in the same manner as the slides 14, 27, 40, and 41, and the outer ends of these slides are bifurcated in the manner described, and 35 in the bifurcation of each slide is pivoted or fulcrumed one arm, 54, of an L-lever 55, each of the levers being mounted upon a bracket 56, secured to the tie. The other arm of the L-lever has connected with it one end of a wire 40 rope or chain 57, the other end of which connects with a lever 58, pivoted upon a bracket 59, secured in any suitable manner upon the cross-ties that support the bell-standard. One 45 end of the lever is connected with an arm 60, which operates the clapper of the bell. It will be understood from the drawings that the bell will sound from both ends of the track-section, so that no matter which way the train is approaching a vehicle or a foot passenger 50 will be notified in ample time to avoid danger of injury in crossing the track.

While it is preferable to employ an audible signal in connection with the gate of this invention, it is to be understood that the inven- 55 tion is not to be limited thereto, as the bell may be omitted without in the least detracting from the value of the gate as a life-preserver.

Of course it will be understood, as usual, that a lantern may be suspended from the 60 gate-arm to constitute a visual signal after dark.

By the simple yet effective arrangement of mechanism shown positive actuation of the gate will be effected no matter in which di-

rection a train may be running, and owing to 65 the simplicity of the parts certainty of operation may be relied upon with the minimum danger of derangement in use.

Having thus described the invention, what I claim is— 70

1. An apparatus of the class described comprising a gate, an actuating mechanism there- 75 for including a pinion carried by the gate-supporting shaft, a toothed element engaged with the pinion, arms carried by the toothed element, and a rock-lever located between said arms and adapted alternately to engage the same to thereby secure the operation of the gate.

2. An apparatus of the class described com- 80 prising a gate, an actuating mechanism therefor including a pinion carried by the gate-supporting shaft, a toothed element engaged with the pinion, arms carried by the toothed element, a rock-lever between said arms and 85 adapted alternately to engage the same, a pivoted lever for actuating said rock-lever, slides projecting through the webs of the rails of a track-section adjacent to which the apparatus is mounted and adapted to be engaged by the 90 flanges of the car-wheels, levers connected at one end with the slides, three-armed levers fulcrumed adjacent one of the rails and each having one of its arms operatively connected with one of the free ends of said last-men- 95 tioned levers, and wire ropes or chains connecting the free arms of the three-armed levers with said pivoted lever.

3. An apparatus of the class described, comprising a gate, an actuating mechanism there- 100 for comprising a pinion carried by the gate-supporting shaft, a toothed element engaged with the pinion, arms carried by the toothed element, a weighted rock-lever, adapted to en- 105 gage the arms, and an automatically-actuated lever in coöperative relation with the rock-lever.

4. An apparatus of the class described, comprising a gate, a rock-lever adapted through 110 interposed mechanism to actuate the same, a pivoted lever engaging the rock-lever, slides projecting through the webs of the rails of a track-section adjacent to which the apparatus is mounted and adapted to be engaged by the 115 flanges of the car-wheels, levers connected at one end with the slides, three-armed levers fulcrumed adjacent to one of the rails, and each having one of its arms operatively connected with the free ends of the said levers, 120 and wire ropes or chains connecting the free arms of the three-armed levers with the rock-lever-actuating device.

5. A track-section, having disposed intermediate of its length a gate, a rock-lever adapted 125 through intermediate mechanism to actuate the gate, a horizontally-disposed lever coöperatively connected with the rock-lever, slides having one end projecting through the webs of

the rail, pivoted levers having one end connected with said slides, three-armed levers each having one of its members connected with one of the levers, and wire ropes or chains connecting the three arms of the three-armed lever with the said horizontally-disposed lever, the wire ropes or chains on the one side of the said lever being crossed, thereby to cause the slides at one end of the section to

be projected while those on the other end are retracted.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CALVIN WINN CURD.

Witnesses:

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R. R. SETTLE.