

No. 659,900.

Patented Oct. 16, 1900.

J. R. RISHEBERGER.  
COKE HANDLING APPARATUS.

(Application filed May 31, 1900.)

(No Model.)

3 Sheets—Sheet 1.

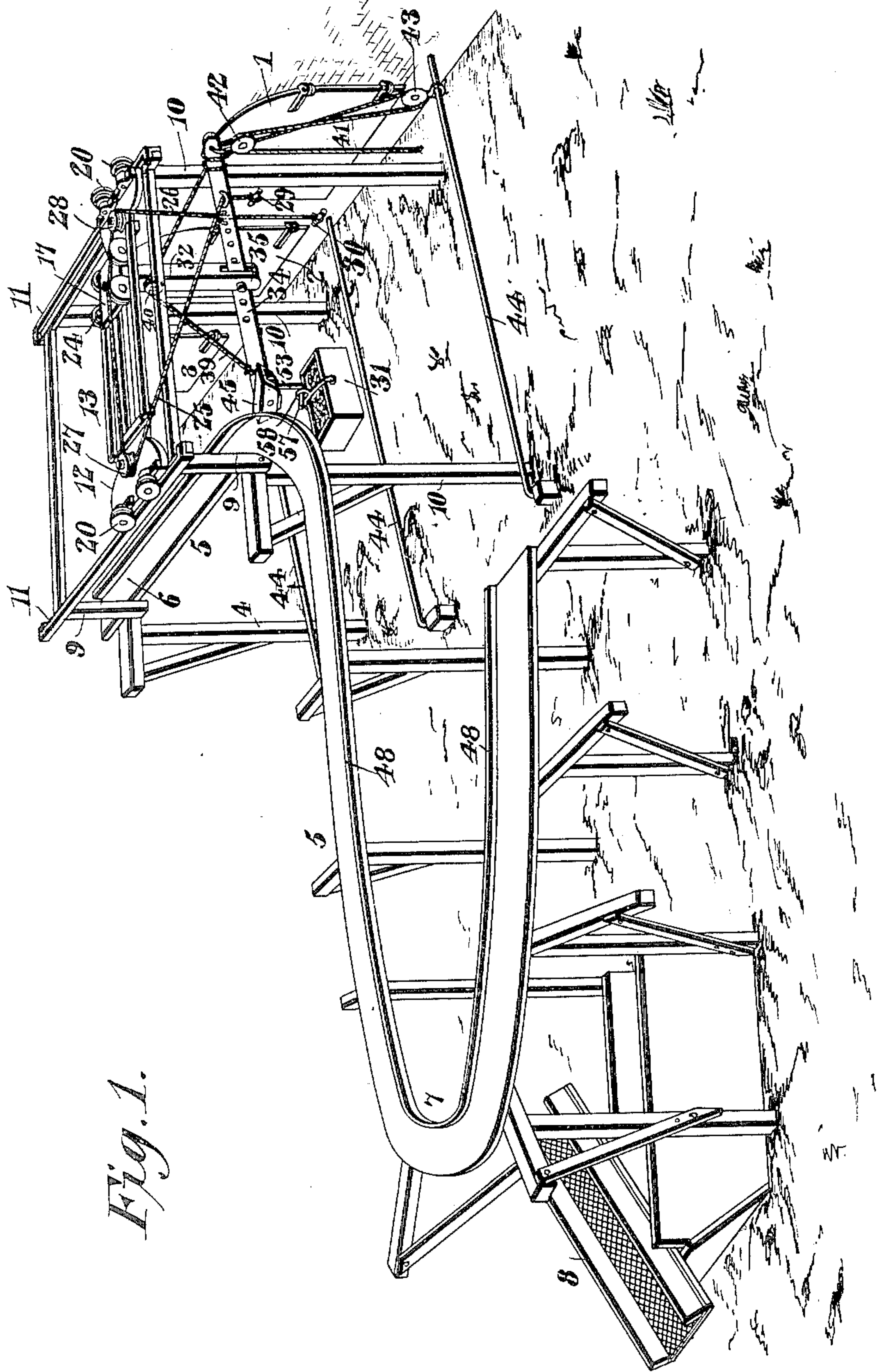


Fig. 1.

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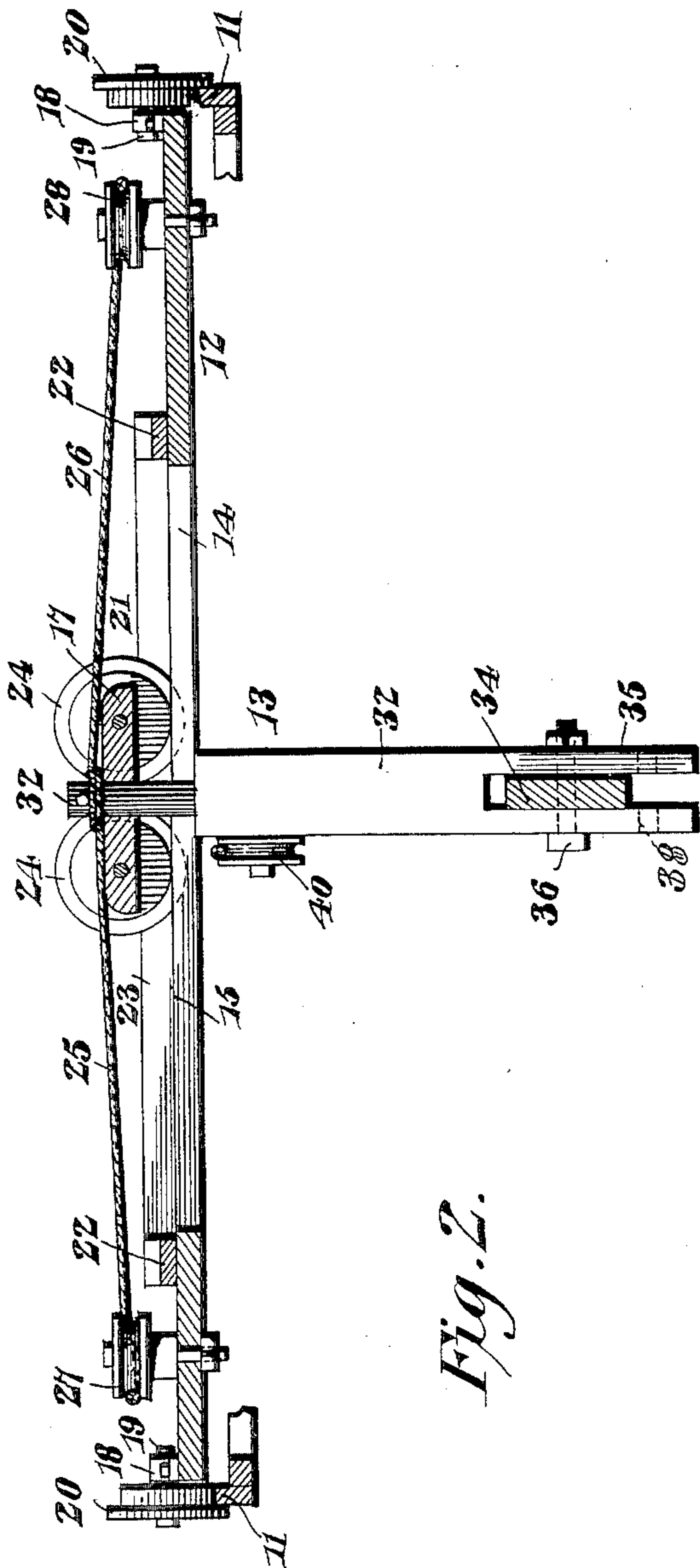
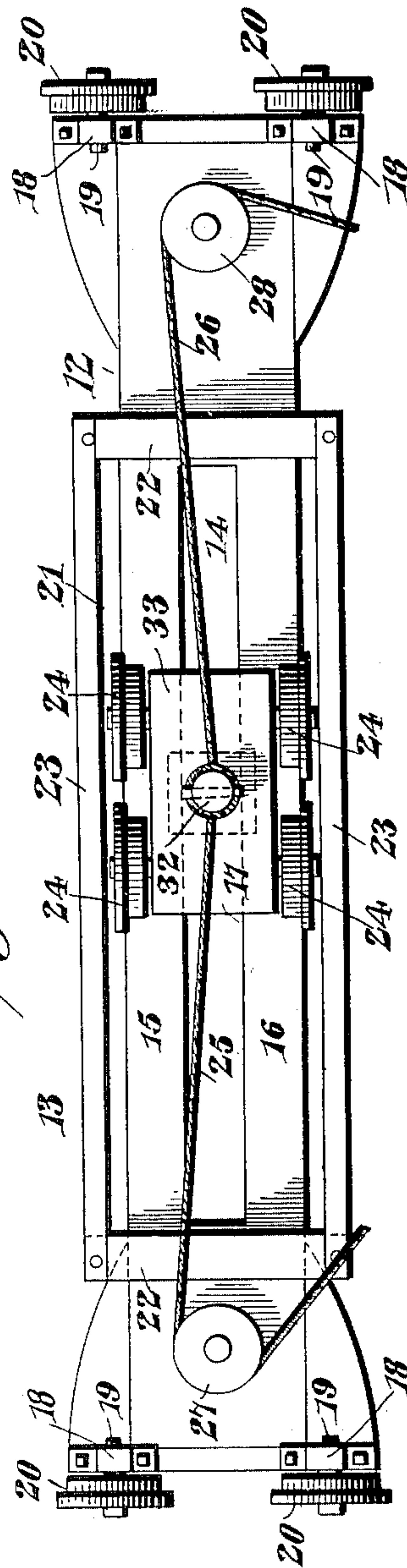


Fig. 2.

Fig. 3.



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Fig. 6.

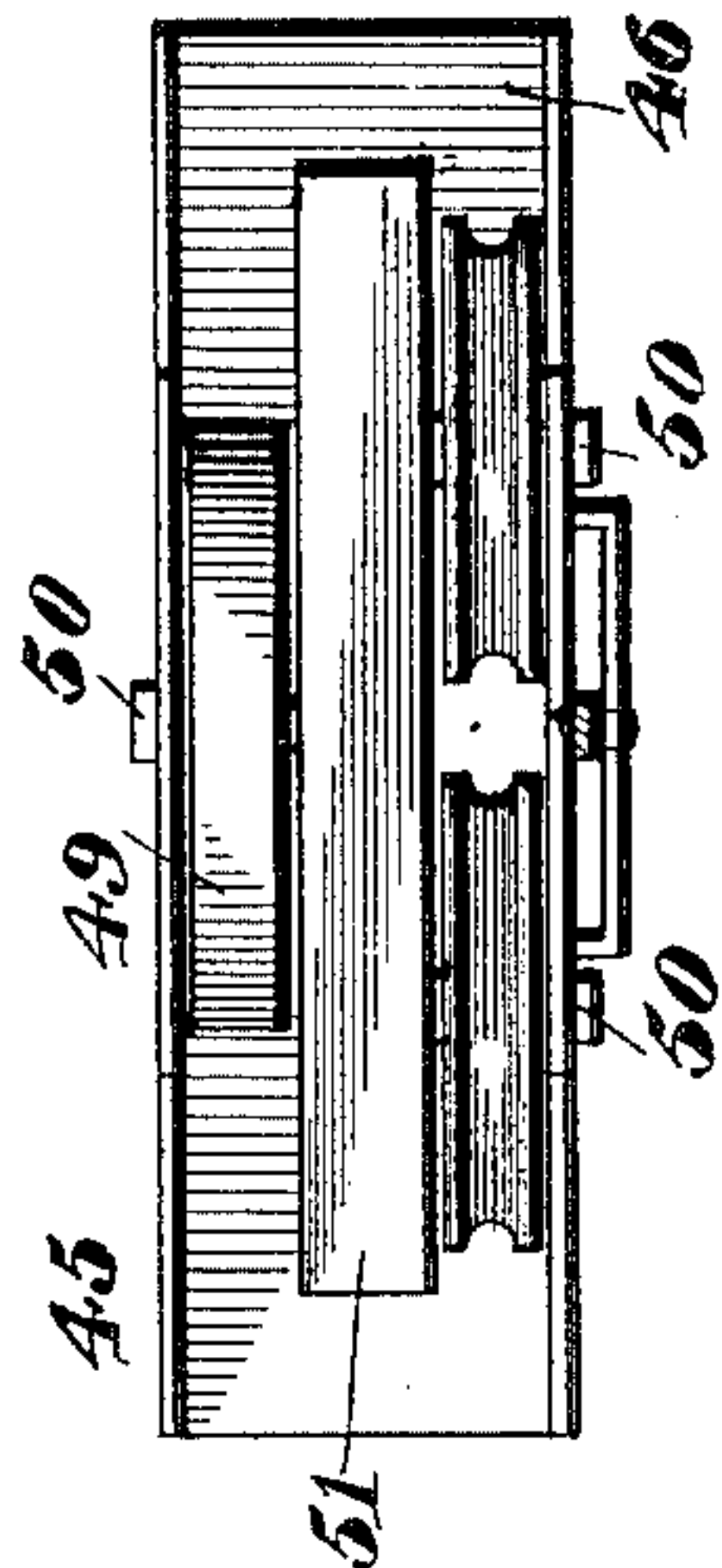


Fig. 5.

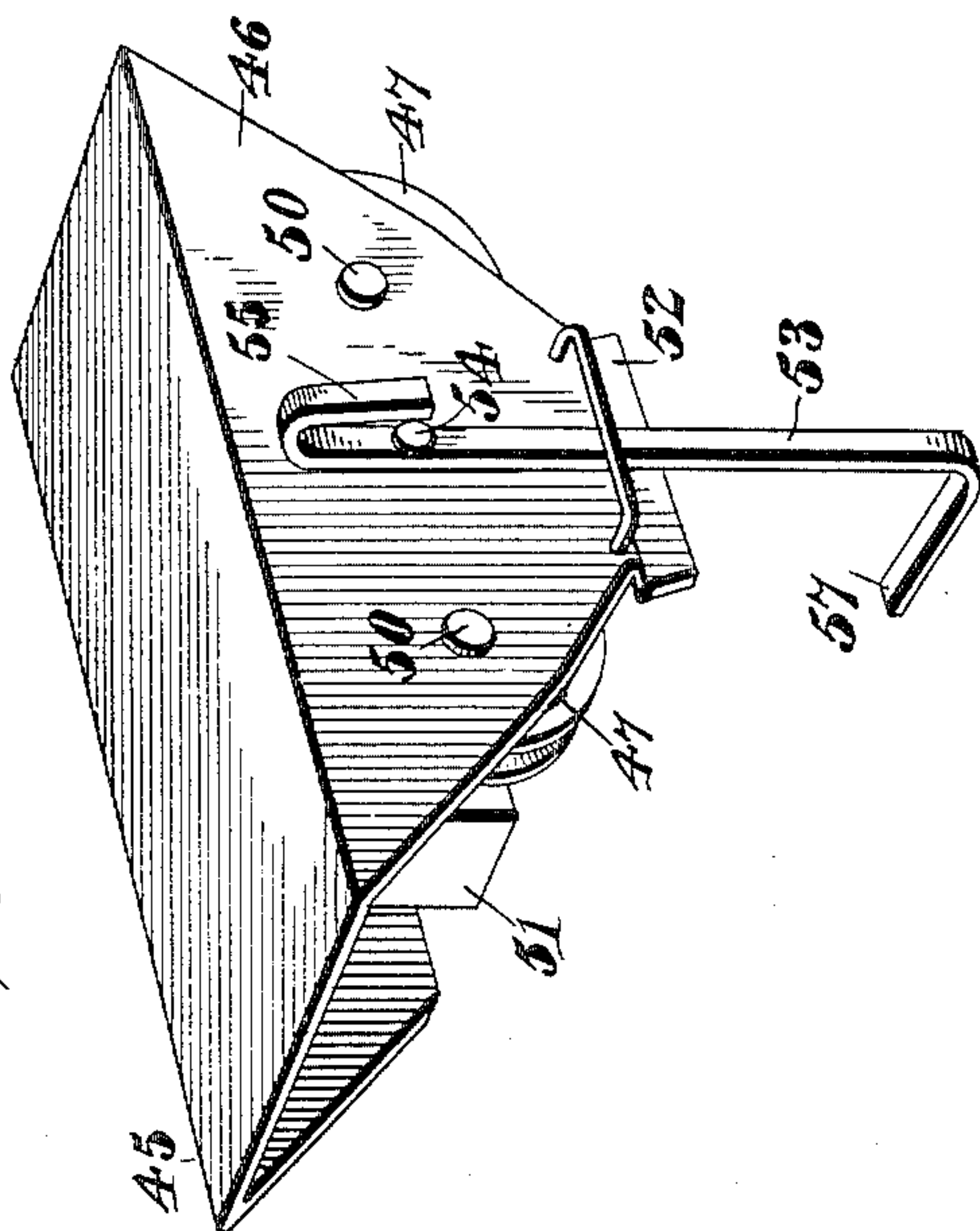
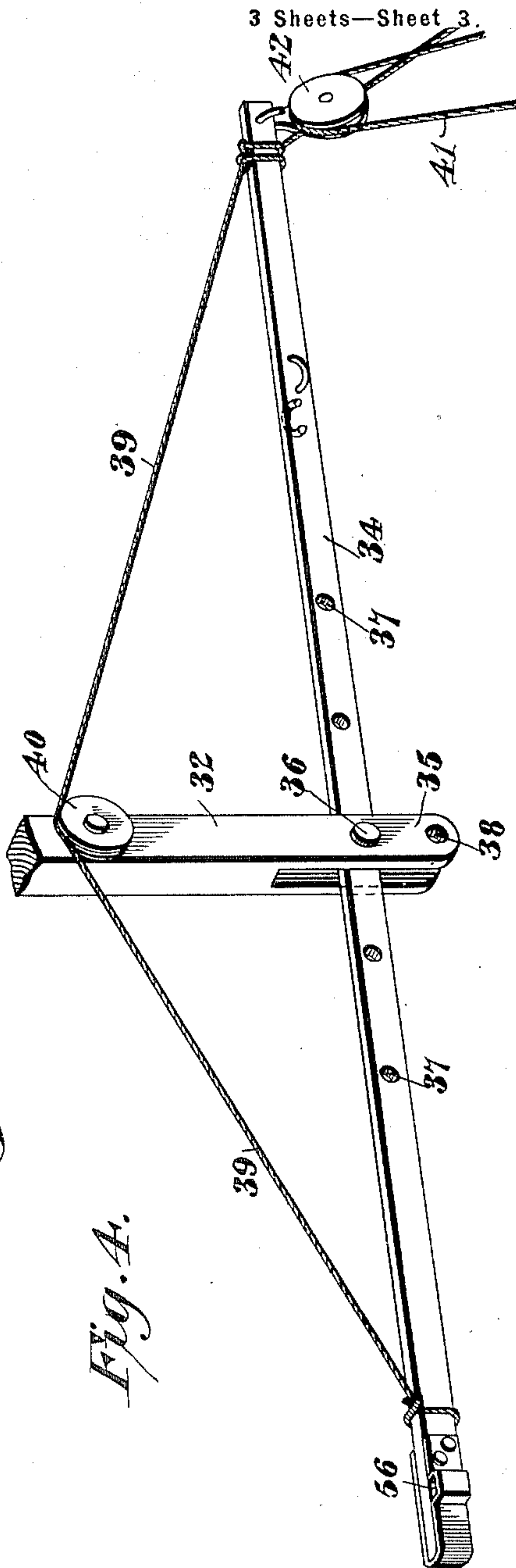


Fig. 4.



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# UNITED STATES PATENT OFFICE.

JAMES ROBERT RISHEBERGER, OF WOODDALE, PENNSYLVANIA.

## COKE-HANDLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 659,900, dated October 16, 1900.

Application filed May 31, 1900. Serial No. 18,619. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES ROBERT RISHEBERGER, a citizen of the United States, residing at Wooddale, in the county of Fayette and State of Pennsylvania, have invented a new and useful Coke-Handling Apparatus, of which the following is a specification.

My present invention relates to a novel coke-handling apparatus, the object in view being to facilitate the conveyance of coke or other material from a coke-oven or battery of ovens to a point or points removed from the ovens for delivery to bins or to conveyances—as, for instance, cars or the like.

To this end the invention consists in providing an inclined way or track extending from a point adjacent to the oven to the point or points of delivery and in providing elevating apparatus movable along the line of ovens and from the ovens to the upper end of the incline or track and designed to raise and lower a traveler or carriage to or from the track, said traveler or carriage being provided with a grappling device which engages a receptacle—as, for instance, a coke-bed—and conveys it under the impulse of gravity along the inclined track to the points of delivery.

In its preferred embodiment the invention consists in the construction and arrangement hereinafter described, illustrated in the accompanying drawings, and defined in the appended claims.

In said drawings, Figure 1 is a perspective view of my apparatus complete employed in connection with a series or battery of coke-ovens and arranged for the delivery of the coke to a separator, which is arranged to deposit the ashes into a bin and to permit the coke to be discharged—as, for instance, into a car for transportation. Fig. 2 is a sectional view of the duplex traveler. Fig. 3 is a top plan view of the same. Fig. 4 is a detail perspective view of the hoisting-beam and its immediately-connected part. Fig. 5 is a detail perspective view of the carriage detached, and Fig. 6 is a bottom plan view of the subject-matter of Fig. 5.

Referring to the numerals of reference employed to designate corresponding parts in the several views, 1, 2, and 3 indicate the doors of a battery or series of coke-ovens in front of which is erected upon suitable trestle

or other supports 4 the inclined way or track 5, which may be of any desired form, but the upper end 6 of which preferably extends parallel with the front of the ovens at a considerable elevation. From the straight upper portion of the track the latter extends—as, for instance, in a loop 7—to a point above the separating apparatus (indicated by the numeral 8) and thence back to a point comparatively near the ovens for the purpose of delivering the carrier, to be described, within reach of the handling mechanism after the contents of the receptacle or coke-bed has been delivered at the desired point.

Supported by a supplemental frame comprising short uprights 9, bolted to the truck-supports, and standards 10, driven into the ground or otherwise secured immediately in front of the ovens, are a pair of traveler-tracks 11, extending parallel with the front of the ovens and designed for the support of the primary truck 12 of the duplex carrier 13. The truck 12, which is designed to be moved in any suitable manner to a point above any one of the battery of ovens, is provided, preferably, with an elongated longitudinal opening 14, defining tracks 15 and 16 for the secondary truck 17, and its opposite ends are preferably enlarged or widened for the support of journal-boxes 18, provided for the reception of the stud-shafts 19 of small flanged rollers or wheels 20, which travel upon the tracks 11 and serve to shift the primary carrier laterally to cause its presentation, as stated, above any oven of the series. The truck 12 is also preferably provided with an oblong guide-frame 21, comprising cross-bars 22, which limit the travel of the secondary truck 17, and side rails 23, disposed somewhat above the body of the truck for the purpose of preventing lateral displacement of the secondary truck 17.

The flanged wheels 24 of the trucks 17 travel upon the tracks 15 and 16, with the flanges in engagement with the edges of the latter and closely adjacent to the side bars 23 of the guide-frame 21, and for the purpose of shifting the secondary truck 17 I attach thereto the oppositely-extending shifting-cables 25 and 26, which are passed around horizontal pulleys 27 and 28, mounted on the primary truck adjacent to its ends, and the lower



ends of said cables, which extend to within easy reach of an operator located upon the ground, are provided with terminal handles 29 and 30, by means of which the secondary or supplemental truck may be moved between the front of the coke-ovens and the track 5 in either direction. This duplex traveler, which, as has been explained, is designed to present the secondary traveler or truck above either oven and to permit of its movement back and forth between the ovens and the track, is intended for the support of suitable hoisting mechanism by means of which a receptacle—as, for instance, a coke-bed 31—may be lifted from the ground adjacent to the oven-door and transferred to the track. This hoisting mechanism comprehends a pendent support or post 32, swiveled in the body 33 of the truck 17, so that while the pendant or post is supported by the duplex traveler and is movable therewith it may be rotated upon its own axis for the purpose of shifting the position of a hoisting-beam 34, intermediately pivoted in the bifurcated lower end 35 of the post 32, as upon a pintle 36, passed through the post and through one of a series of apertures 37 with which the beam 34 is provided, to permit of its adjustment for the purpose of securing any desired leverage. In order to secure vertical adjustment of the fulcrum of the beam 34, the lower end of the pendant 32 is provided with a series of transverse openings 38, through either of which the pintle 36 may be passed. The hoisting-beam 34 is additionally supported and stayed by a stay-cable 39, secured at its opposite ends at points adjacent to opposite ends of the beam and passed over an idler 40, secured upon the pendant 32 at a point above the beam. Any suitable form of actuating mechanism for swinging the hoisting-beam may be provided; but I prefer to reeve a hauling-cable 41 through a pair of tackle-blocks 42 and 43, the first of which is hooked to the rear end of the beam 34 and the latter of which is hooked upon what may be termed a “block-rail” 44, which permits the block 43 to slide toward or from the ovens as the hoisting-beam is swung or moved in either direction with the supplemental truck 17. One end of the hauling-cable 41 is of course fixedly attached to the rear end of the beam 34 in order that a downward pull on the free end of the cable will cause the depression of the rear end of the beam and the elevation of its front end, which is designed to effect the hoisting of the receptacle or coke-bed 31 from the ground immediately in front of the oven-doors to the track 5. It is necessary, however, to provide some antifrictional device for facilitating the conveyance of the receptacle along the track from the upper end of the latter to the point of delivery, and for this purpose I have devised a simple and efficient carriage 45, preferably comprising a metal frame 46 of substantially inverted-U shape in cross-sectional contour and within which are jour-

naled a pair of alined track-wheels 47, arranged to travel upon the narrow edge rail 48 of the track 5, and a third wheel 49, which moves upon the surface of the track or incline proper. The several wheels are mounted upon short studs 50, passed through the sides of the carriage and into the longitudinally-disposed block 51, mounted therein and retained by said shafts. The lower edge of one side of the carriage is preferably inturned to form a guide-flange 52, which bears against the under edge of the incline to prevent casual displacement of the carriage as the latter gravitates to the point of delivery.

Inasmuch as the carriage 45 is designed to be lifted from the track or incline and re-deposited thereon by means of a hoisting-beam 34, it is obvious that it must be provided with means for attachment to the front end of the beam 34 and with means for detachably connecting it to the receptacle or coke-bed. I therefore pivotally mount upon one side of the carrier a double hook 53, the upper end above its pivot 54 being turned down, as indicated at 55, for engagement with a socket 56 at the front end of the beam 34, and the lower end of which below the carriage is bent at right angles to form a hook 56 for engagement with the bail 57 of the receptacle or coke-bed 31.

The operation of my device is as follows: Supposing the apparatus to be organized as illustrated in Fig. 1, the conveyer, receptacle, or coke-bed is placed upon the ground immediately outside of an oven-door, and the coke is drawn into the bed. The hoisting-beam 34 having been properly presented by the movement of the primary traveler in position above the particular furnace being drawn and by the movement of the secondary or supplemental traveler into proximity to the front of the oven, the hook 57 of the carriage, which latter is stationed at the front end of the hoisting-beam, is slipped into the bail 58 of the coke-bed 31. Power is now applied to the hauling-cable 41 to depress the rear end of the hoisting-cable 44 to effect the elevation of the carriage 45, with its attached load, to the horizontal plane of the adjacent portion of the incline or track 5. A pull upon the handle 39 will cause the supplemental or secondary truck of the duplex traveler to move upon the primary truck to present the post 32 at a point adjacent to the incline 5. The beam 34 is then swung laterally (the swiveling of the post 32 permitting this movement) to deposit the carrier 45 upon the incline, the carrier being released and permitted to gravitate to the point of delivery by the easing of the hauling-cable 41, which permits the depression of the front end of the beam 34 and effects the withdrawal of the socket 56 from the hook 55. The released carrier gravitates down the incline to the separating apparatus 8 or other point of delivery where the contents of the conveyer or bed are dumped, after which the carrier is permitted to proceed to the lower end



of the incline, which, as shown in Fig. 1, is arranged sufficiently near the handling apparatus to permit the hoisting-beam to be again connected with the carriage for the purpose of swinging the empty receptacle or bed back to the front of the oven for refilling. When it is desired to draw the next adjacent oven, the block 43 is released from the rail 44, the duplex carriage is moved upon the tracks 11 to a position above the next oven, and the block 43 having been hooked to the next rail the operation just described is repeated in connection with this oven and with the others of the series in a similar manner. I desire it to be understood, however, that while I have illustrated my apparatus in connection with coke-furnaces and while the preferred embodiment of the invention is particularly adapted for the handling of coke I wish it to be distinctly understood that the device is not limited to use in this connection, but may be employed for the handling and conveyance of materials of various characters. I therefore reserve the right to effect such changes, modifications, and variations of the construction and arrangement of the apparatus as may fall properly within the scope of the protection prayed and which may be necessary or desirable for the purpose of adapting it for use in other connections.

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

1. In an apparatus of the character described, the combination with a track and a carrier designed to move thereon, of a duplex traveler arranged in a plane above the track, hoisting mechanism supported by the traveler, and means for detachably connecting the hoisting mechanism to the carrier to lift said carriage to or from the track.

2. In an apparatus of the character described, the combination with an inclined track, of a duplex traveler arranged in a plane above the track, a swiveled pendant supported by the traveler, a hoisting-beam carried by the pendant, a carrier designed to move upon the track and provided with means of attachment to a conveyer, and means for detachably connecting the carrier to the hoisting-beam.

3. In an apparatus of the character described, the combination with an inclined track and a duplex traveler, said traveler comprising a movable primary truck, and a secondary truck movable upon the primary truck, of a pendant swiveled in the secondary truck, a hoisting-beam pivoted on the pendant, a carrier designed for movement upon the track and provided with means of attachment to a conveyer, means for operating the hoisting-beam, and means for effecting the attachment of said beam to the carrier.

4. The combination with an inclined track, of a duplex traveler comprising a primary truck movable above the track and a second-

ary truck movable upon the primary truck in a direction at right angles to the movement of said primary truck, a swiveled pendant supported by the secondary truck, a hoisting-beam pivotally supported by the pendant, means for shifting the position of the secondary truck, means for operating the hoisting-beam, and a carrier designed for movement upon the inclined track and provided with means for attachment to the hoisting-beam and to a conveyer, whereby said carrier may be attached to a conveyer or receptacle at a point removed from the track and may be deposited upon said track through the movements of the hoisting-beam and the supplemental truck.

5. In an apparatus of the character described, the combination with an inclined track, a carrier designed to move thereon and provided with a hook, of a laterally-movable supporting-post, a hoisting-lever pivotally mounted upon said post and provided with a socket for engagement with the hook upon the carrier, and means for operating the hoisting-beam.

6. The combination with an inclined track, of a traveler-supporting frame mounted to one side of the track and in a higher plane, a primary truck movable upon the frame in a direction parallel to the track, a secondary truck movable upon the primary truck toward or from the track, a swiveled pendant carried by the truck and extending through and below the primary truck, a hoisting-beam having an adjustable pivotal connection with the lower end of the pendant, a pair of shifting-cables connected to the secondary truck and extending therefrom in opposite directions to permit the truck to be shifted toward or from the track, a rail extending substantially parallel with the direction of movement of the secondary truck, a block having a sliding engagement with said rail, a block secured to the rear end of the hoisting-beam, a hauling-cable reeved through said blocks and designed for the actuation of the beam, a carrier designed for movement upon the inclined track, and means for detachably connecting the carriage to the front end of the hoisting-beam.

7. A carriage designed for use in an apparatus of the character described comprising a frame and wheels and a pivoted member having a downwardly-disposed hook above its pivot and provided with a second hook at its extremity, said hooks being designed for the purpose of effecting the attachment of the carriage to a supporting part and to a conveyer or receptacle.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES ROBERT RISHEBERGER.

Witnesses:

E. P. WEDDELL,  
B. C. BOYD.