

No. 773,820.

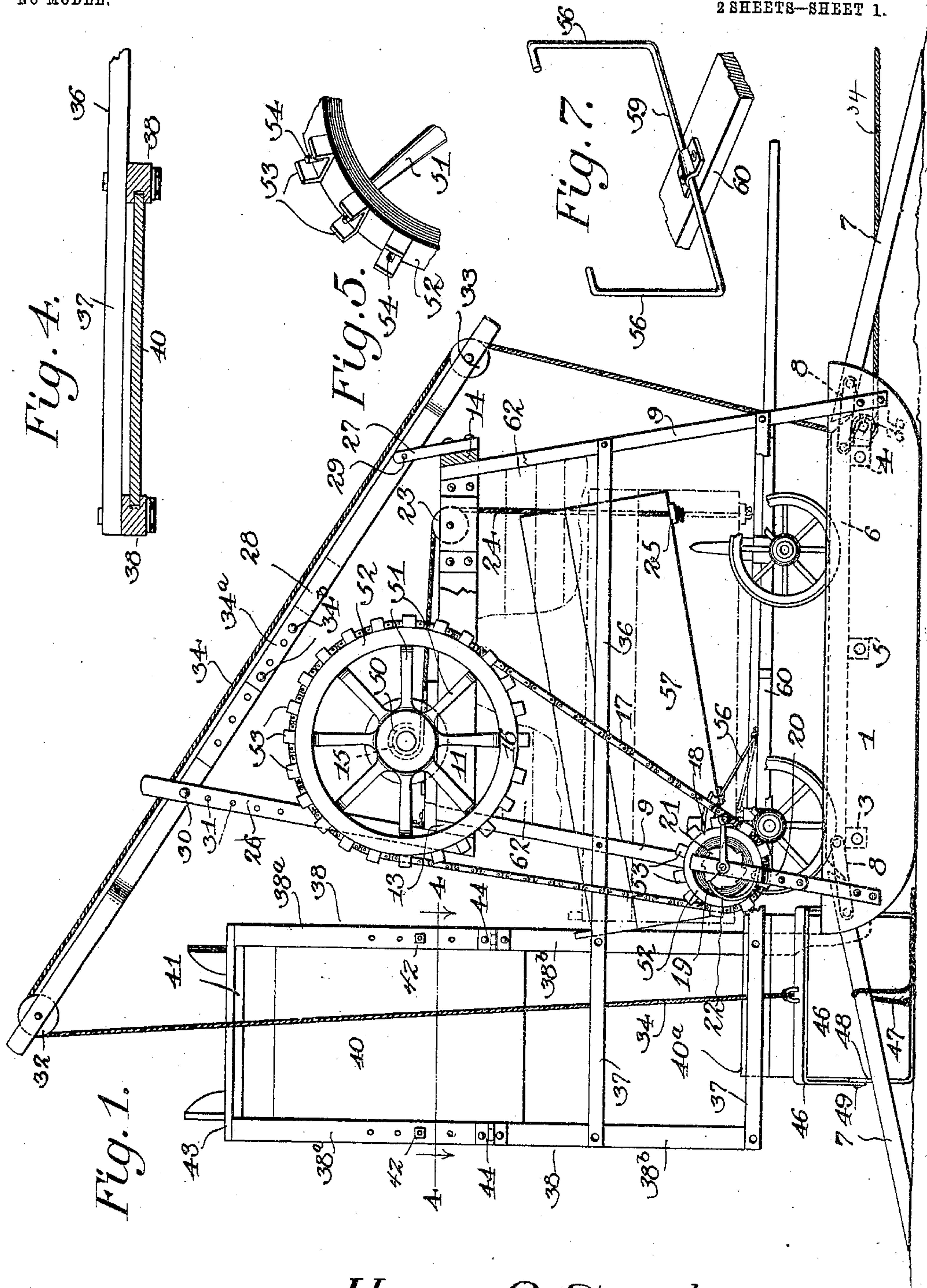
PATENTED NOV. 1, 1904.

H. O. SPARKS.
PORTABLE GRAIN ELEVATOR.

APPLICATION FILED MAR. 9, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
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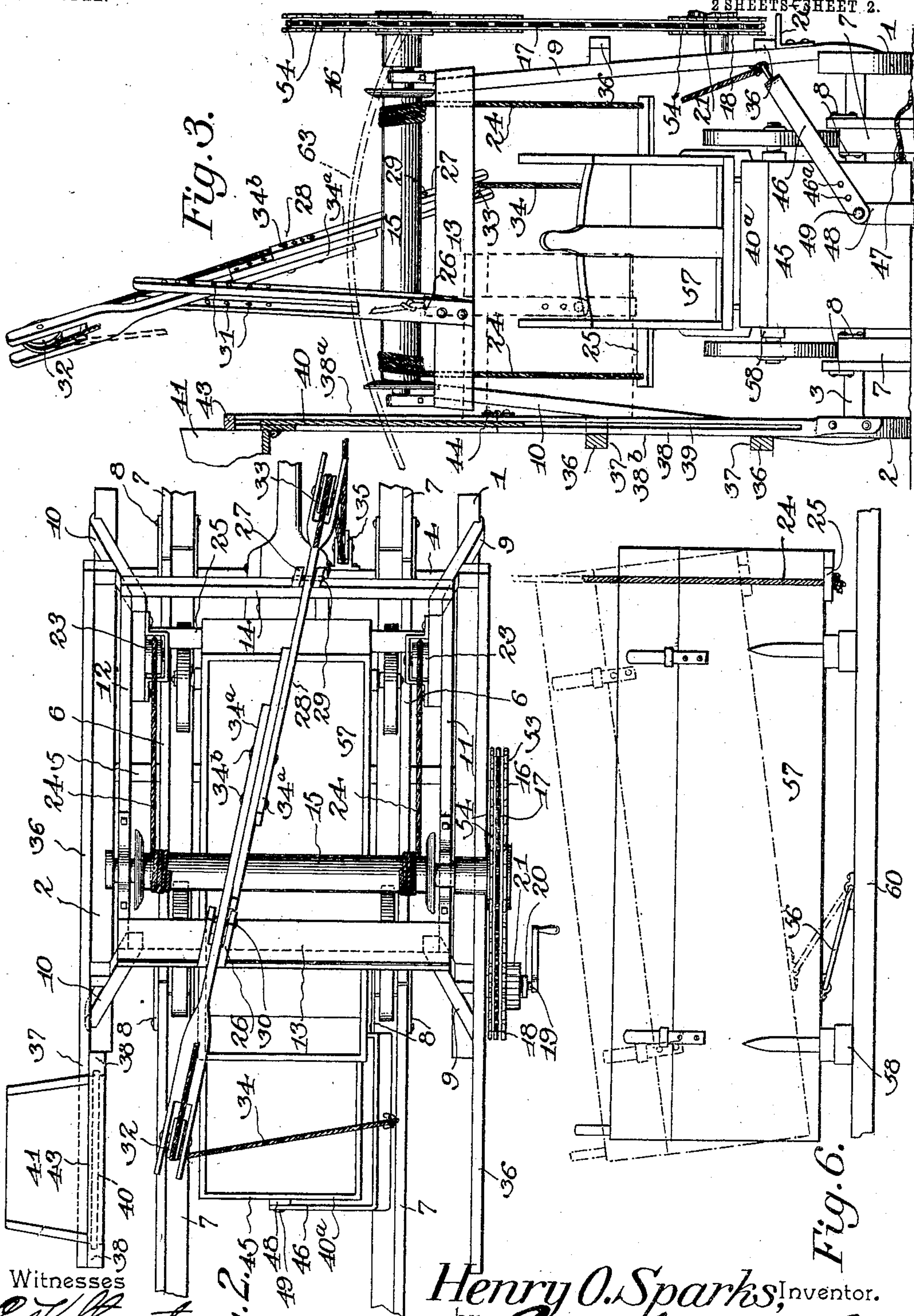
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UNITED STATES PATENT OFFICE.

HENRY O. SPARKS, OF SHELBYNA, MISSOURI.

PORTABLE GRAIN-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 773,820, dated November 1, 1904.

Application filed March 9, 1904. Serial No. 197,323. (No model.)

To all whom it may concern:

Be it known that I, HENRY O. SPARKS, a citizen of the United States, residing at Shelbina, in the county of Shelby and State of Missouri, have invented a new and useful Portable Grain-Elevator, of which the following is a specification.

This invention relates to portable grain-elevators, the same being used for elevating grain, corn, and other products to raised places of storage; and it has for its object to provide a device of this class which shall possess superior advantages in point of simplicity, durability, and general efficiency, which may be readily transported from one place to another, and by means of which the material may be elevated to any desired point and there discharged.

With these and other ends in view the invention consists in the improved construction, arrangement, and combination of parts which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of embodiment of the invention, it being understood, however, that various changes, modifications, and alterations may be made, especially as to size, form, and general manner of assemblage within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a side elevation, partly in section, of a portable grain-elevator constructed in accordance with the principles of the invention. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical sectional view taken transversely through the chute and looking in the direction of the hoisting apparatus. Fig. 4 is a sectional detail view taken on the line 4 4 in Fig. 3. Fig. 5 is a detail view showing the construction of one of the sprocket-wheels used in connection with the invention. Fig. 6 is a side view illustrating a wagon-body and a portion of the running-gear of a grain-wagon specially constructed for use in connection with the invention. Fig. 7 is a detail perspective view of a portion of the reach and a yoke whereby said reach is connected with the wagon-body.

Corresponding parts in the several figures are indicated by similar numerals of reference.

The base-frame of my improved apparatus is composed of a pair of low sled-runners 1 2, suitably connected and spaced apart by means of cross-pieces 3 and 4 near the ends of said runners and by an intermediate cross-piece 5, said cross-pieces being raised slightly above the ground, so as not to interfere with the draft-animals walking between the runners. The cross-pieces 3 4 support a pair of track-rails 6 6, each provided at the ends thereof with extensions 7 7, connected therewith by means of links 8 8, said extensions being provided with sloping ends adapted to engage the correspondingly sloping or oblique ends of the track-sections 6, upon which the extensions 7 are supported while the device is not in operation or while it is being transported from one place to another. By simply lifting the track-sections 7 their free ends may be swung outwardly to rest upon the ground, while their sloping inner ends will be supported upon the ends of the rail-sections 6, with which they are connected, thus forming a track having inclined ends upon which a wagon may be driven up at one end and down at the other, as will be readily understood.

The base-runners 1 2 are provided at the ends thereof with uprights 9 and 10, which converge slightly in an upward direction, the uprights 9 at one side of the machine being connected by a longitudinal cap-piece 11, while the uprights 10 are connected by a longitudinal cap-piece 12. Transverse braces 13 14 connect the uprights 9 10 at the ends of the machine.

The cap-beams 11 12 are provided with bearings for a shaft 15, carrying at one end a sprocket-wheel 16, which is connected by a chain 17 with a sprocket-wheel 18, which is mounted upon a crank-shaft 19, journaled in one of the uprights 9 and in a bracket 20, suitably connected with said upright. Rigidly connected with the sprocket-wheel 18 is a ratchet-wheel 21, engaged by a spring-pawl 22, which is suitably secured to or connected with the bracket 20, so as to prevent the sprocket-wheel 18 from rotating in a reverse direction. Upon the inner sides of the

cap-beams 11 12 are journaled a pair of guide-pulleys 23, over which a pair of hoisting-ropes 24 pass to the shaft 15, which constitutes a winding-drum to which said ropes are suitably attached. The free ends of said ropes are connected by a cross-piece 25. The transverse brace 13 at one end of the machine supports a bifurcated upright 26, and a clip 27 is connected with the cross-brace 14 at the opposite end of the machine.

28 designates a ridge-beam which is pivotally mounted upon a bolt 29, extending transversely through the side members of the clip 27, said ridge-beam extending between the arms or members of the bifurcated upright 26, between which it is mounted adjustably by means of a bolt 30, which latter may be adjusted in perforations 31, extending transversely through the arms of said bifurcated upright. The ridge-beam 28 carries at its upper end a pulley 32 and at its lower end a pulley 33. A hoisting-rope 34 is reeved over said pulleys and over a guide-pulley 35, which is suitably connected with the cross-bar 4 at one end of the base-frame.

The uprights 10 10 at one side of the frame of the machine are connected by a pair of longitudinal braces 36, which extend at the front end of the frame so as to form brackets 37, to which are secured a pair of vertical guide-beams 38, the inner sides of which have grooves 39 to accommodate a slidable plate 40, at the upper end of which is hingedly mounted a chute 41. Means, such as bolts 42, are provided, whereby the chute-carrying plate 40 may be held securely at any desired elevation between the grooved guide-bars 38. The upper ends of the latter are connected by a cross-bar 43, and said grooved guide-bars are preferably constructed each of a pair of members 38^a and 38^b, connected by means of hinges 44 in order to enable the frame to be folded or collapsed when the machine is not in use. For like reasons the ridge-beam 28 when the machine is not in use may be detached from its supports and the upright 26, which is hingedly connected with the brace 13, may then be folded down, as will be readily understood. The ridge-beam may be constructed of several independent sections suitably connected together, said sections being capable of being separated from each other in order that the ridge-beam may be stored in comparatively small compass.

By the construction of the frame of the machine and its attachments as herein described it is possible to transform the same into a shed or shelter by simply boarding up the sides of the frame, including the uprights 9 9 and 10 10, as shown at 62, and placing over the top of the frame a roof, of sheet metal or other suitable material, as indicated at 63.

The entire structure may thus be transformed into a structure whereby the machine itself and a wagon or farm implement of some kind

may be safely sheltered from inclement weather.

I have described bars 36, having the extensions 37, as being connected with the uprights 10 at one side of the frame; but it is obvious that they may within the scope of the invention be secured to the uprights 9 at the opposite side or that such bars or braces may be secured to each side of the frame in order that the chute-carrying frame may be transferred from one side of the machine to the other, so as to make a right-hand and a left-hand dump, as may be required.

The hoisting-rope 34 or the end of said hoisting-rope which depends from the pulley 32 at the upper end of the ridge-beam carries a bucket 45, having a bail 46, which is connected pivotally and eccentrically therewith, so that when said bucket is elevated by the hoisting-rope which is connected with the bail it shall have a tendency to tilt automatically. This tendency may be counteracted by means of a pulling-rope 47, which is connected with the bottom of the bucket at the edge thereof which is nearest the pivotal point. A strengthening-strap 48 extends under the bucket, the ends of said strap being connected with the members 49, whereby the bucket is connected pivotally with its bail. This tilting bucket, as shown in the drawings, may be provided with an extension-top 40^a in order to adapt it to hold a larger quantity of lighter grains, such as oats, and the bail 46 is provided with a plurality of perforations 46^a, whereby it may be connected adjustably with the upwardly-extending arms of the strengthening-strap which extends underneath the bucket, so as to provide for the lengthening and shortening of the bail, which may be rendered necessary by the use of extension-tops of varying heights.

The sprocket-wheels 16 and 18, which are used in connection with my invention, are each preferably of the construction illustrated in Fig. 5 of the drawings, by reference to which it will appear that the construction of said sprocket-wheels includes a hub 50, spokes 51, diverging from said hub, and a rim 52, which is provided with a plurality of transverse clips or chain-guides 53 and with pins 54, disposed centrally of the chain-guides 53 to engage the links of the chain. This is an extremely simple and effective construction of elements which ordinarily are rather expensive and which when broken usually require to be replaced with new ones. By the improved construction herein exhibited repairs of the sprocket-wheels may be readily effected when required by simply providing new chain-engaging clips, which may be readily secured in position upon the rim of the wheel.

It has already been stated that the ridge-beam is preferably constructed of several independent sections suitably connected. It is also preferred to so construct the ridge-beam

that it may be adjustable as to the length thereof by causing the members of which it is composed to be overlapped to a greater or less extent. Thus in the drawings the ridge-beam has been illustrated as being composed of overlapping sections 34^a 34^b, connected adjustably by bolts 34^b. I am thereby enabled to elevate the front end of the ridge-beam to a considerable height, and it will also be observed that by proper adjustment with relation to the supporting-upright 26 the guide-pulley 32 may be supported about centrally between the grooved uprights 38, which support the chute-carrying plate 40. This is obviously important in order that the hoisting-bucket when the machine is in operation may be guided in contact with said plate 40. As will be seen by reference to Fig. 3, the hoisting-bucket while it is being filled occupies a position in alinement with the tail end of the wagon containing the material which is to be elevated. After the bucket has become filled and the hoisting apparatus is set in motion the bucket will swing or sway laterally until it reaches a position in contact with the guiding-plate 40, whereby it is retained in an upright position while it is being hoisted and until the point is reached, the operator in the meanwhile assisting to prevent the tilting of the bucket by pulling upon the rope 47, provided for the purpose. The latter obviously serves to connect the upper and lower members of the grooved beams 38, said plate extending when the machine is in normal operative position across the parts which are connected by the hinges 44.

In connection with my invention I use a wagon which is especially equipped to cooperate with the hoisting apparatus of my invention. The special equipment consists in a yoke or bail the ends of the arms 56 of which are pivotally connected with the under side of the wagon-bed 57 directly in front of the rear bolster 58, the cross-bar 59 of the yoke being connected pivotally with the reach 60 of the running-gear. This yoke, which may be constructed of ordinary round iron, may be readily attached to any wagon of ordinary construction.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of my invention will be readily understood by those skilled in the art to which it appertains.

When a wagon containing grain or other material which is to be unloaded and elevated to the place of storage is driven upon the track-rails 6, it will obviously be elevated some distance above the ground. The hoisting-bucket is now lowered between the track extensions 7 at the rear end of the wagon, and the end-gate of the latter is partly removed, so as to cause the contents of the wagon to escape into the bucket. When the

latter is full, the end-gate is replaced and the draft-animals, which have in the meantime been detached from the wagon, may now be hitched to the end of the hoisting-rope 34 for the purpose of elevating the bucket. As the latter rises it is held level by means of the pulling-rope attached to the bottom thereof, and it will be guided by contact with the chute-carrying plate 40 until the upper edge of the latter is reached, when by releasing the pulling-rope the bucket will automatically become tilted and discharge its contents over the chute 41, whereby it is guided to the place of storage, proper adjustment with relation to the latter having previously been made. The bucket is now lowered and the operation is repeated until the wagon has been emptied of its contents, the emptying of the wagon-box being assisted by adjusting the cross-piece 25 under the front end of the wagon-box, and then operating the hoisting apparatus, including the sprocket-wheels 18 and 16, the drum 15, the crank-shaft 19, and the pawl-and-ratchet mechanism 21 22. The wagon-box will thereby not only be tilted by the upward direct draft upon its rear end, but the draft being exercised also in a forward direction the yoke connected with the under side of the wagon-bed near the rear end of the latter will become tilted upwardly, thus raising and temporarily supporting in a raised position the rear or discharge end of the wagon-bed. This is obviously convenient, especially when the hoisting-bucket is used in connection with an extension-top, which may thus be more readily accommodated under the discharge end of the wagon. After the wagon has been emptied of its contents it may by simply releasing the pawl 22 from the ratchet-wheel 21 be lowered to its normal position, after which the draft-animals are again hitched to the wagon and the latter removed from the machine.

It is obvious that instead of utilizing draft-animals for the purpose of operating the hoisting mechanism any other suitable power may be made use of for this purpose.

The device may be used as a wagon-box-lifting device by simply duplicating the guiding-pulleys 23 and the flexible hoisting elements passing from said pulleys to the winding drum or shaft, the duplicate pulleys being disposed on the opposite side of said shaft and having their free ends connected by a cross-bar, which then, together with the cross-bar 25, may be disposed under the ends of the wagon-bed, when by operating the hoisting apparatus the wagon-box will be lifted off the running-gear, as will be readily understood.

Having thus described my invention, I claim—

1. A runner-frame, track-rails supported upon the same and having hinged extensions,

uprights supported by the runners, longitudinal cap-beams and transverse braces connecting the upper ends of said uprights, a winding-drum journaled upon the cap-beams, 5 guide-pulleys upon the inner sides of the latter, hoisting elements wound upon the drum and passing over the guide-pulleys, a cross-piece connecting said hoisting elements, a sprocket upon the winding-drum, a crank-shaft, a sprocket-wheel and a ratchet-wheel 10 carried by said shaft, a pawl engaging said ratchet-wheel, and a chain connecting the sprocket-wheel with the sprocket-wheel upon the winding-drum.

15 2. A runner-frame, track-rails supported upon the same and having extensions hingedly connected therewith, uprights supported upon the runner-frame, cap-beams and transverse braces connecting the upper ends of the 20 uprights, a clip upon one of the transverse braces, a bifurcated upright hingedly connected with the other brace, a ridge-beam connected pivotally with the clip and adjustably with the bifurcated upright, pulleys near 25 the ends of said ridge-beam, and a flexible hoisting element guided over said pulleys.

3. A base-frame, uprights supported by said frame, braces at the upper ends of said uprights, a clip connected with one of said braces, 30 a bifurcated upright connected hingedly with the other brace, a ridge-beam composed of members connected together adjustably and extensibly, said ridge-beam being connected hingedly with the clip and adjustably with 35 the hinged bifurcated upright, guide-pulleys near the ends of said ridge-beam, and a flexible hoisting element guided over said pulleys.

4. A base-frame, uprights supported thereby, braces connecting the upper ends of said 40 uprights, a ridge-beam supported adjustably with relation to said braces, pulleys near the ends of said ridge-beam, a guide-pulley connected with the base-frame, a flexible hoisting element guided over said pulley and over 45 the pulleys upon the ridge-beam, a bail connected with the free end of said hoisting element, a bucket connected pivotally and eccentrically with said bail, a vertically-disposed frame, and a chute-carrying plate supported 50 adjustably by said frame.

5. In hoisting apparatus, a frame having grooved side pieces and a chute-carrying plate adjustable in said grooves.

6. In hoisting apparatus, a frame having 55 grooved side pieces, a plate mounted slidingly between said side pieces, and a chute hingedly connected with said plate.

7. In hoisting apparatus, a frame having 60 grooved side pieces, a plate vertically adjustable between said side pieces, a chute hingedly connected with said plate, and means for re-

taining the sliding plate at various adjustments between the side pieces.

8. In hoisting apparatus, a frame having grooved side pieces, each of said side pieces 65 consisting of a plurality of members hingedly connected with each other, and a plate mounted slidingly between said side pieces and extending over the hingedly-connected members to prevent the latter from flexing. 70

9. In hoisting apparatus, a frame having grooved side members, each comprising a plurality of sections hingedly connected, a plate 75 mounted slidingly between said side members, and a chute hingedly connected with said plate.

10. In hoisting apparatus, a base-frame, uprights on said frame, braces connecting the upper ends of said uprights, a ridge-beam supported 80 adjustably with relation to said braces, hoisting-tackle supported by said ridge-beam, a frame having grooved side members, a chute-carrying plate mounted slidingly between said side members, a bail connected with a flexible 85 element of the hoisting-tackle, and a bucket connected pivotally and eccentrically with said bail.

11. In hoisting apparatus, a supporting-frame, a chute-carrying plate connected slidingly and adjustably with said frame, a bail 90 connected with a flexible member of the hoisting apparatus, a bucket connected pivotally and eccentrically with said bail and adapted to be guided in contact with the chute-carrying plate, and a pulling-rope connected with the 95 bottom of said bucket.

12. The combination with wagon-bed elevating mechanism comprising hoisting-tackle including a pair of hoisting-ropes and a cross-bar connecting the free ends of the same, of a 100 wagon including a box, running-gear supporting the same, a yoke having the ends of its arms connected pivotally with the under side of the wagon-bed in front of the rear bolster and pivotal connecting means between the 105 cross-bar of said yoke and the rear of the running-gear.

13. A grain-wagon including a wagon-box and a running-gear, in combination with a box-tilting device comprising a yoke pivotally connected by the cross-bar thereof with the reach 110 of the running-gear and having the ends of its arms pivotally connected with the under side of the wagon-box in front of the rear bolster. 115

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

HENRY O. SPARKS.

Witnesses:

JOHN R. LYELL,
C. W. RASH.