(No Model.) 3 Sheets—Sheet 1.

L. E. & H. HOY.

ELEVATING AND DUMPING DEVICE.

No. 567,100. Patented Sept. 1, 1896.

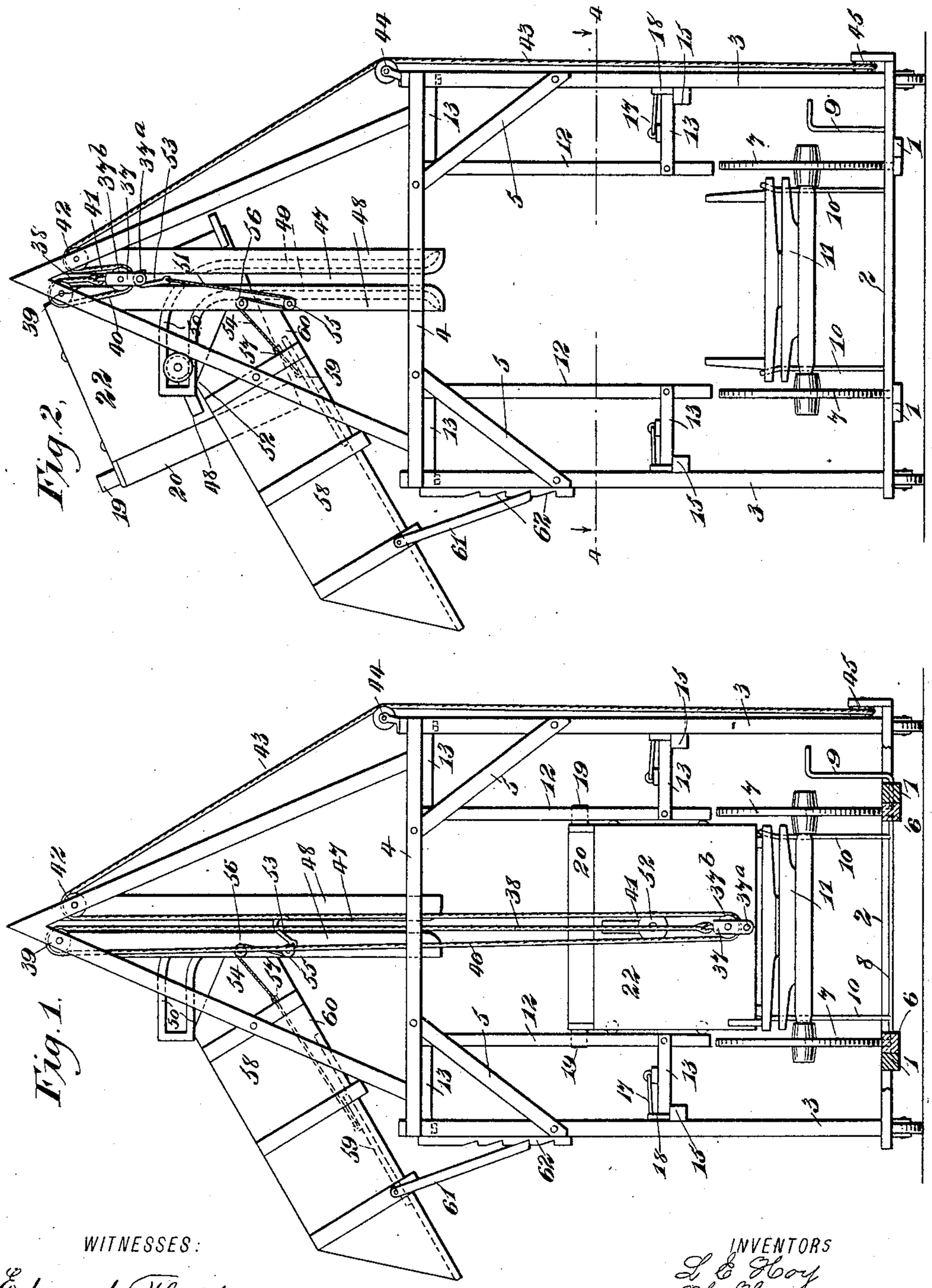

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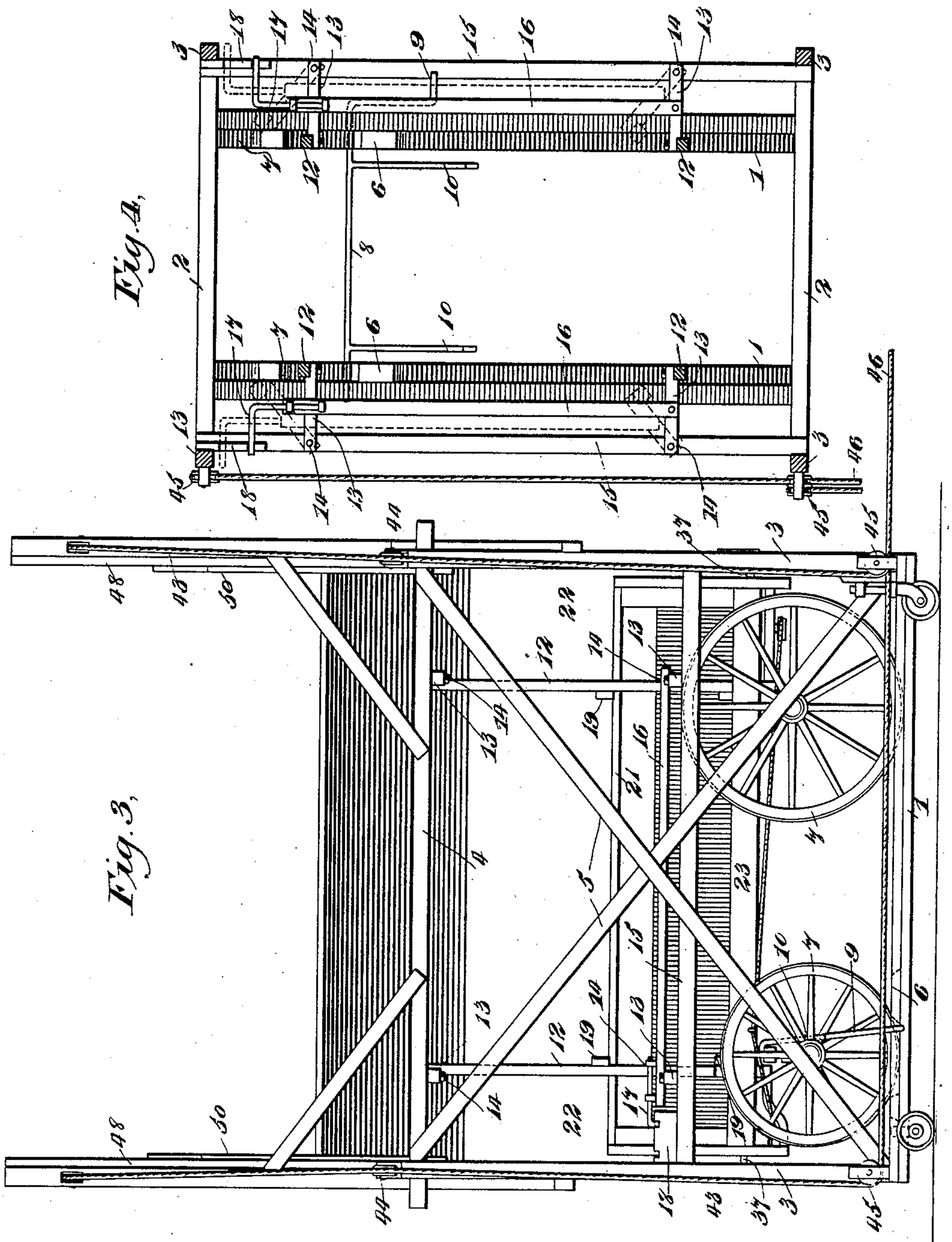
Fig. 3,



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ELEVATING AND DUMPING DEVICE.

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Fig. 4.

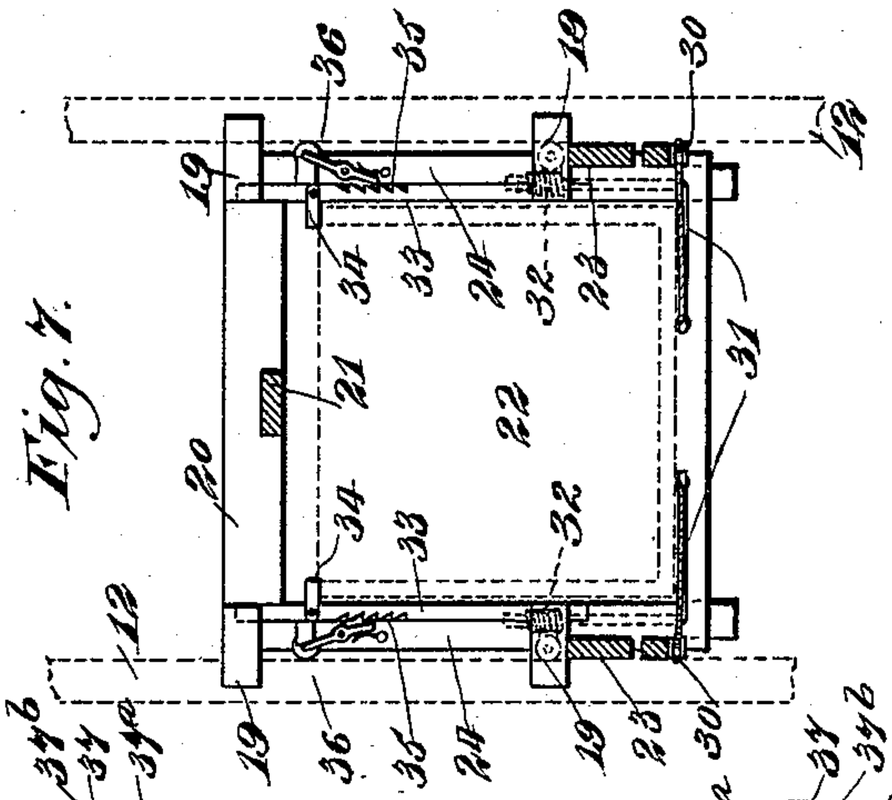


Fig. 5.

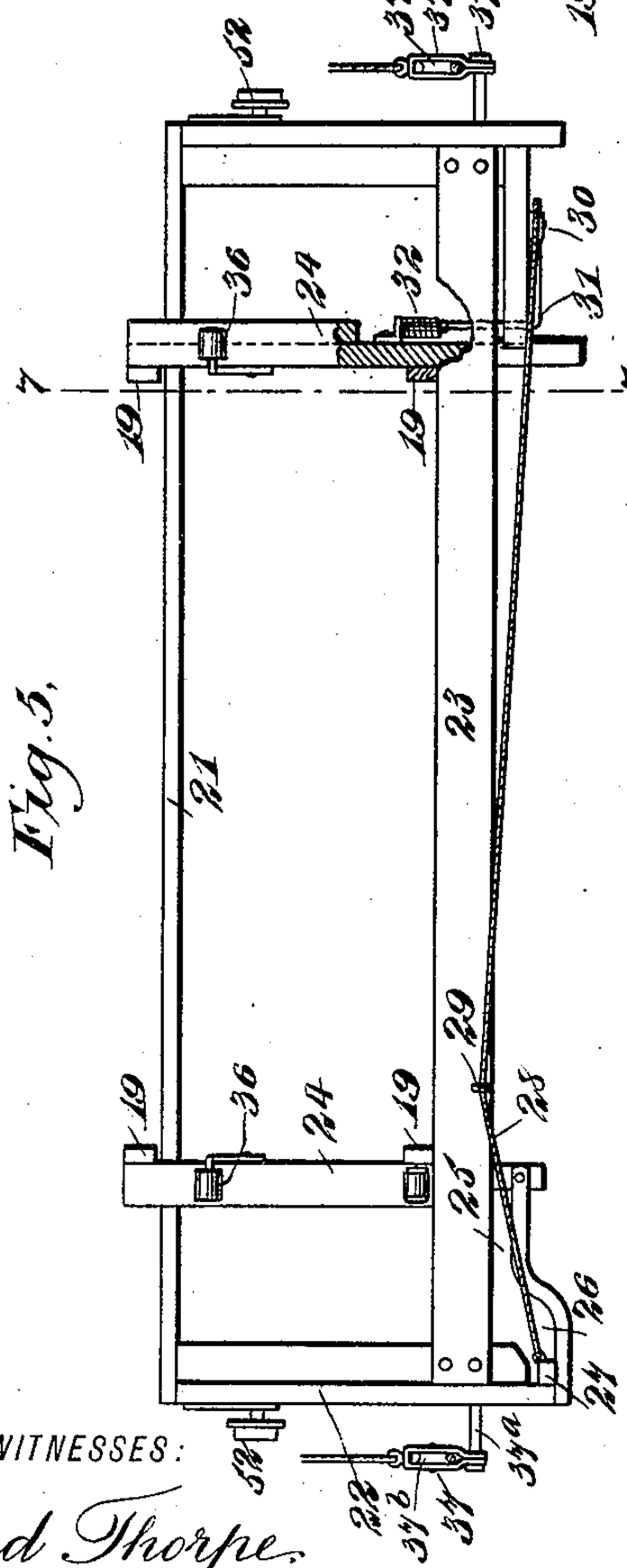
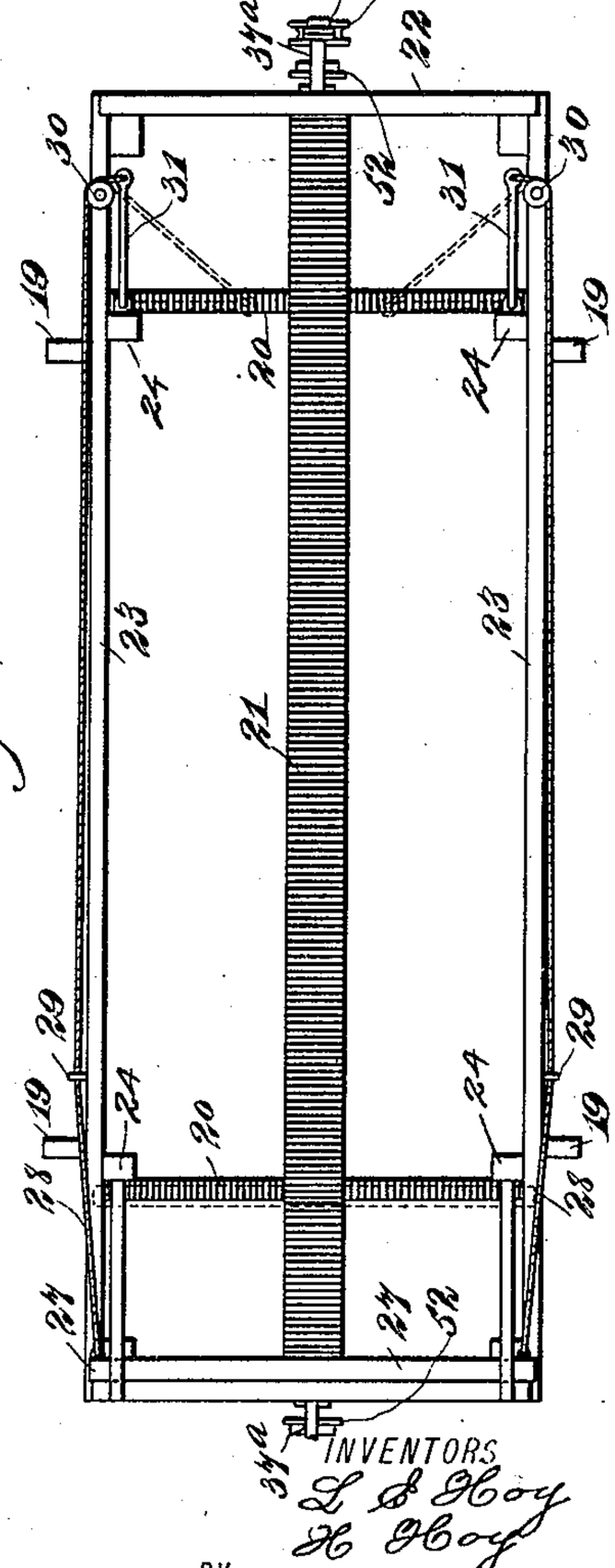


Fig. 6.



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UNITED STATES PATENT OFFICE.

LOUIS E. HOY, OF FREMONT, NEBRASKA, AND HARMAN HOY, OF BALTIMORE, MARYLAND.

ELEVATING AND DUMPING DEVICE.

SPECIFICATION forming part of Letters Patent No. 567,100, dated September 1, 1896.

Application filed October 16, 1895. Serial No. 565,821. (No model.)

To all whom it may concern:

Be it known that we, LOUIS E. HOY, of Fremont, in the county of Dodge and State of Nebraska, and HARMAN HOY, of Baltimore, in the State of Maryland, have invented a new and Improved Elevating and Dumping Device, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in that class of devices which are employed for elevating and dumping the boxes of wagons, cars, and other vehicles, of which the device shown and claimed in our former patent, No. 529,618, granted November 20, 1894, is a type; and the object of the invention is to provide a device of this character of a simple and inexpensive construction adapted to hold the running-gear of the vehicle securely in place while the bed or box is being removed, the device having means adapted to automatically lock itself to the said box and to raise and dump the same and then lower said box into its original position on the running-gear.

The invention consists in an elevating and dumping apparatus comprising a framework having a track to guide the vehicle into the proper position, and provided with a cage having devices to automatically engage the box or body of the vehicle and lock the same to said cage, and means for raising and tilting said cage to dump the contents of the vehicle body or box and for lowering the same, so as to replace said box on the running-gear.

The invention also contemplates certain novel features of the construction, combination, and arrangement of the various parts of the device whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use than various other devices heretofore employed, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an end view of the device embodying our improvements, the cage being shown in its lowered position, ready to raise the box of a wagon below it. Fig. 2 is a similar view showing the cage raised and in the dumping position. Fig. 3 is a side view showing the parts in the position shown in Fig. 1. Fig. 4 is a horizontal section taken in the plane indicated by line 4 4 in Fig. 2. Fig. 5 is a side view of the cage detached and drawn to an enlarged scale. Fig. 6 is an under side plan view of said cage, also detached and drawn to an enlarged scale; and Fig. 7 is a transverse section taken vertically through the cage in the plane indicated by line 7 7 in Fig. 5.

The device is provided with a frame having parallel tracks extending along the lower part of its sides and connected at the ends by cross pieces or sills 2, extending between them, and said frame comprises upright corner-posts 3 3, connected at their upper ends by transverse and longitudinal beams 4, and said frame is strengthened by diagonal braces 5 at its sides and ends and is provided with wheels, so that it may be conveniently moved about.

The tracks 1 are provided near the front end of the frame with oppositely-arranged raised portions or blocks 6, and said tracks are arranged to receive the wheels of the vehicle, herein shown as a wagon, the front wheel 7 of said wagon being arranged to pass over said blocks or raised portions 6 of the tracks when the wagon is driven along the tracks, so as to hold the wagon against rearward movement.

A bar or rod 8 extends between the tracks 1 just forward of the blocks 6, having one end extending outside the frame, as seen at 9, and bent to form a cranked handle, and between said tracks said bar 8 is provided with hooked arms 10, the extremities of which are arranged, when the bar 8 is turned by means of its handle 9, to engage over the bolster 11 of the wagon to hold the running-gear against upward movement when the bed is removed therefrom, as will be presently explained.

Above the tracks 1 are arranged vertical guide-bars 12, having lower and upper arms 13, the lower arms being pivotally mounted, as seen at 14, on beams 15, extending along

the sides of the frame of the device, and the upper arms being similarly pivoted to the side bars 4 of the frame, as clearly seen in Fig. 3, and the guide-bars 12 at each side of the frame are connected by braces 16 extending between them and having at their ends hooked latch-bars 17, the bent ends of which are arranged to be engaged in notches formed in plates 18, secured on the side beams 15 of the frame. The lower ends of the guide-bars are arranged, when said bars are swung toward one another, to stand directly over the wheels 7 of the wagon, as clearly seen, to prevent the same from being lifted off the track, and when swung away from each other the lower ends of said guide-bars are moved out of position over the wheels, said guide-bars being held in each position by the engagement of the bent ends of the bars 17 in the notches in the plates 18.

When the guide-bars 12 are swung to their innermost position or toward each other, they form guides to be engaged by lugs or projections 19 on the sides of the cage of the device, said cage being constructed with cross-bars 20 extending across its top, a longitudinal bar 21 connecting said cross-bars and extending centrally along the top of the cage, which is otherwise open, end pieces 22, and side bars 23 extending between the end pieces adjacent to the lower side portions of the cage, and connected to the upper cross-bars 20 by means of uprights 24, as clearly seen in Figs. 5, 6, and 7.

The cage is arranged to slide up and down in the guideways formed by the bars 12 when swung toward each other, and the bottom of said cage is open and of dimensions adapted, when the cage is lowered, to fit over and inclose the bed of the wagon when the same is in place on the tracks 1, as shown in Figs. 1 and 3.

At the forward end of the cage, at opposite sides of the lower part thereof, are formed longitudinal oppositely-arranged slotted openings or guideways 25, the outer front ends of which are bent down, as shown at 26 in Fig. 5, and said guideways receive and guide the ends of a cross-beam 27, connected with cords or equivalent flexible devices 28, extending through eyes set in the side bars 23 of the cage, with their opposite ends passing around rollers 30 at the rear end of the cage, and connected to levers or arms 31, pivoted at opposite sides of that end of the cage, and provided with springs 32, arranged to draw said arms 31 normally toward each other when the beam 27 is released. In this way, when the cage is lowered over the box of the wagon, the beam 27 being held in its position, as shown in Figs. 5 and 6, by hand or by means of a suitable latch device, said cage completely covers the sides of said box, and when the beam 27 is released the springs 32 act to move the levers or arms 31 toward each other, as indicated in dotted lines in Fig. 6 and in full lines in Fig. 7, so that said arms, together with the beam 27, to which they are connected, are moved in under the box of the wagon to lock the same to the cage while being raised and dumped.

On each of the uprights 24 of the cage is mounted to slide a bar 33, having at its upper end an inwardly-extending arm or finger 34, adapted to be engaged by and to rest upon the top of the wagon-bed when the cage is lowered thereon, as indicated in dotted lines in Fig. 7, and said slide bars or rods 33 are provided on their outer sides with ratchet-teeth 35, adapted to be engaged by spring-pawls 36 on uprights 24, and having upwardly-inclined bent tails arranged to be engaged by the inner sides of the guide-bars 12 when the cage is in its lowered position, so that in said position said pawls will be out of engagement with said rack-faces 35, so as to permit the slide bars 33 to move up and down freely.

At the lower parts of the opposite ends of the cage are arranged frames 37, pivoted on projecting pins or lugs 37^a and carrying sheaves 37^b, around which pass ropes or equivalent devices, one end 38 of each rope being connected to the respective frame 37, whence the rope is carried up to the upper part of the frame and over a sheave 39, thence down, as seen at 40 in Fig. 1, around the sheave 37^b, thence up, as seen at 41 in said figure, over a sheave 42 at the top of the frame, and down, as seen at 43, over rollers 44 and 45 at the sides of the frame, whence the ropes may be led, as indicated at 46 in Figs. 3 and 4, to a team or any other device for applying power to lift the cage, it being of course understood that we do not limit ourselves to the employment of this particular arrangement of the sheaves and ropes, inasmuch as it is obvious the same may be duplicated and more sheaves employed at each end of the cage. By preference rollers will be arranged on the cage to engage the guide-bars 9, and if desired blocks and tackles may be used in lieu of sheaves 39 and 37.

At each end of the frame of the device, at the upper part thereof, is formed a guideway 47, formed between vertical guide-strips 48, and said guideways serve to receive and guide the pins 37^a, whereon the frames 37 are pivoted, and thereby guide the cage in its vertical movement after the same has passed above the guide-bars 12, and to the inner sides of said strips 48 are secured guide-strips 49, preferably of metal, the upper ends of which are bent over laterally, as seen at 50 in Figs. 1 and 2. The guide-strips 49 serve to receive and guide rollers 52, secured on the ends 22 of the cage, directly above the pins 37^a thereon, and one of said strips 49 at each end of the device is cut away, as indicated at 51, to permit the passage of the pin 37^a along the guideway 47. In this way it will be seen that as the cage is raised the rollers 52 pass along between guide-strips 49 and pins 37^a between guide-strips 48, so that when the rollers 52 reach the bent portions 50 of the guide-strips

49 the upper part of the cage will be thrown over sidewise, as shown in Fig. 2, turning on pins 37ª as pivots, so as to dump the contents of the wagon-box into a chute 58, having its bottom inclined to deliver such contents at any desired point.

The bottom of the chute 58 is open, as indicated at 60 in Figs. 1 and 2, and to prevent the material when dumped from the wagon-box from falling through said opening we provide the same with a sliding door or hatch 59, (seen in dotted lines in Figs. 1 and 2,) to opposite ends of which are connected ropes 54 or equivalent devices passing through openings 57 in the ends of the chute 58 and around rollers or sheaves 55 and 56, having at their ends hooks 53 to be engaged by pins 37ª when the cage is raised, said hooks being guided on the strips 48 so as to be kept in position for such engagement. In this way, when the cage is raised the said pins will engage said hooks and the sliding bottom or door 59 is moved so as to partially close the opening 60 in the chute bottom and prevent the spilling of the material therethrough. The chute 58 is pivoted at its upper end, and the inclination thereof is adapted to be changed by means of supporting-legs 61, the lower ends of which engage notched strips 62 on the frame. The mouth of the chute will also be provided with hinged sections at the sides to permit the material, when dumped, to be guided into a car or narrow opening, as a door or window, for example.

When the cage is lowered, the tails of the spring-pawls 36 will engage the inner sides of the guide-bars 12, so as to withdraw the said pawls from engagement with the ratchet-teeth on the slide bars or rods 33, whereby said rods will be permitted to slide freely up and down, and in this way it will be seen that as the cage is lowered over the box of a wagon the arms 34 will engage the upper edge of said box, so as to limit the downward movement of the slide-bars 33. When the cage is again raised, the ends or tails of the pawls 36 passing out of engagement with the guide-bars 12, it will be seen that said pawls are released and their springs act to press them into engagement with the ratchet-teeth of the slide-bars, whereby when the cage is in a raised position and about to be tilted the slide-bars 33 are held against upward movement. In this way the wagon-box is held against being displaced or falling through the top of the cage when the cage is tipped over to dump the contents of the box.

The device constructed as above described is extremely simple and inexpensive and is well adapted for raising and dumping the boxes of vehicles of all kinds, since the cage is adapted to be automatically locked to the box when lowered over the same, so as to raise and dump the box, and when this has been accomplished the lowering of the cage replaces the box on the running-gear, which is held against movement by the devices provided for the purpose.

It will also be obvious that considerable modification may be made in the device as herein set forth without material departure from the principles and spirit of our invention, and for this reason we do not wish to be understood as limiting ourselves to the precise form and arrangement of the device shown.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination of a frame having a track to guide the wheels of a vehicle, a bar extending between said tracks and having one end extending laterally beyond one track, and bent to form a crank, and devices on opposite ends of said bar to engage the running-gear of the vehicle and hold the same against being lifted off the track, substantially as set forth.

2. The combination of a frame having a track to guide the wheels of a vehicle, a transverse bar extending between said tracks and having one end extending laterally beyond one track, and bent to form a crank-handle whereby the bar may be rocked, and hooks on the ends of said bar to engage the running-gear of the vehicle and hold the same against being lifted off the track, substantially as set forth.

3. The combination of a frame, a cage movable therein, a chute pivoted at one end at the upper part of said frame and adapted to receive the contents of the cage when the same is dumped, legs on the opposite end of said chute, and notched bars to be engaged by said legs, to vary the inclination of the chute, substantially as set forth.

4. The combination of a frame, a cage movable therein, a chute at the upper part of said frame, having an opening in its bottom for the passage of said cage, a hatch to close said opening in the bottom of the chute, and means actuated from said cage when moved, to close said hatch, substantially as set forth.

5. The combination of a frame, a cage movable therein, a chute at the upper part of the frame, having an opening in its bottom for the passage of said cage, a sliding hatch to close said opening in the bottom of the chute, and means actuated from said cage when the same is moved above the chute, to close said hatch, substantially as set forth.

6. The combination of a frame, a cage movable therein, a chute at the upper part of the frame, having an opening in its bottom for the passage of said cage, a sliding hatch to close said opening in the bottom of the chute, lugs on the cage, and hooks connected to the sliding hatch and arranged to be engaged by said lugs on the cage when the cage is moved, whereby the hatch is closed, substantially as set forth.

7. The combination of a frame having ver-

tical guides and adapted to receive between said guides a vehicle, a cage movable vertically in said guides and adapted, when lowered, to surround and inclose the bed of the vehicle, and spring-actuated means carried by said cage to engage said bed and lock the same to the cage, substantially as set forth.

8. The combination of a frame having vertical guides and adapted to receive between said guides a vehicle, a cage having an open bottom and movable vertically in said guides and adapted, when lowered, to surround and inclose the bed of the vehicle, spring-actuated means carried by said cage to engage said bed and lock the same to the cage, and means to raise and tilt said cage, substantially as set forth.

9. The combination of a frame having vertical guides and adapted to receive between said guides a vehicle, a cage having an open bottom and movable vertically in said guides and adapted when lowered, to surround and inclose the bed of the vehicle, a beam arranged to slide at one end of the lower part of the cage and arranged when moved, to engage under the bed of the vehicle to lock the same to the cage, and means for moving said beam, substantially as set forth.

10. The combination of a frame having vertical guides and adapted to receive between said guides a vehicle, a cage having an open bottom and movable vertically in said guides and adapted when lowered, to surround and inclose the bed of the vehicle, a beam arranged to slide at one end of the cage and arranged when moved, to engage under the bed of the vehicle to lock the same to the cage, levers pivoted at the opposite end of the cage and provided with arms adapted when the levers are moved, to engage under the sides of the bed and lock the same to the cage, springs to actuate said levers, and connections between the levers and the beam, whereby the same are actuated simultaneously, substantially as set forth.

11. The combination of a frame having guides and adapted to receive a vehicle, a cage movable vertically along said guides, and having an open bottom adapted when the cage is lowered, to receive and surround the bed of the vehicle, slides on the cage, having projections to be engaged by the upper part of the bed when the cage is lowered, ratchet-teeth on the slides, dogs to engage said ratchet-teeth, and arranged to be held out of engagement therewith when the cage is lowered, and means carried by the cage, to engage under the bed and lock the same to the cage when the cage is lowered, substantially as set forth.

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HARMAN HOY.

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D. A. LUMBARD.
Witnesses to signature of Harman Hoy:
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