

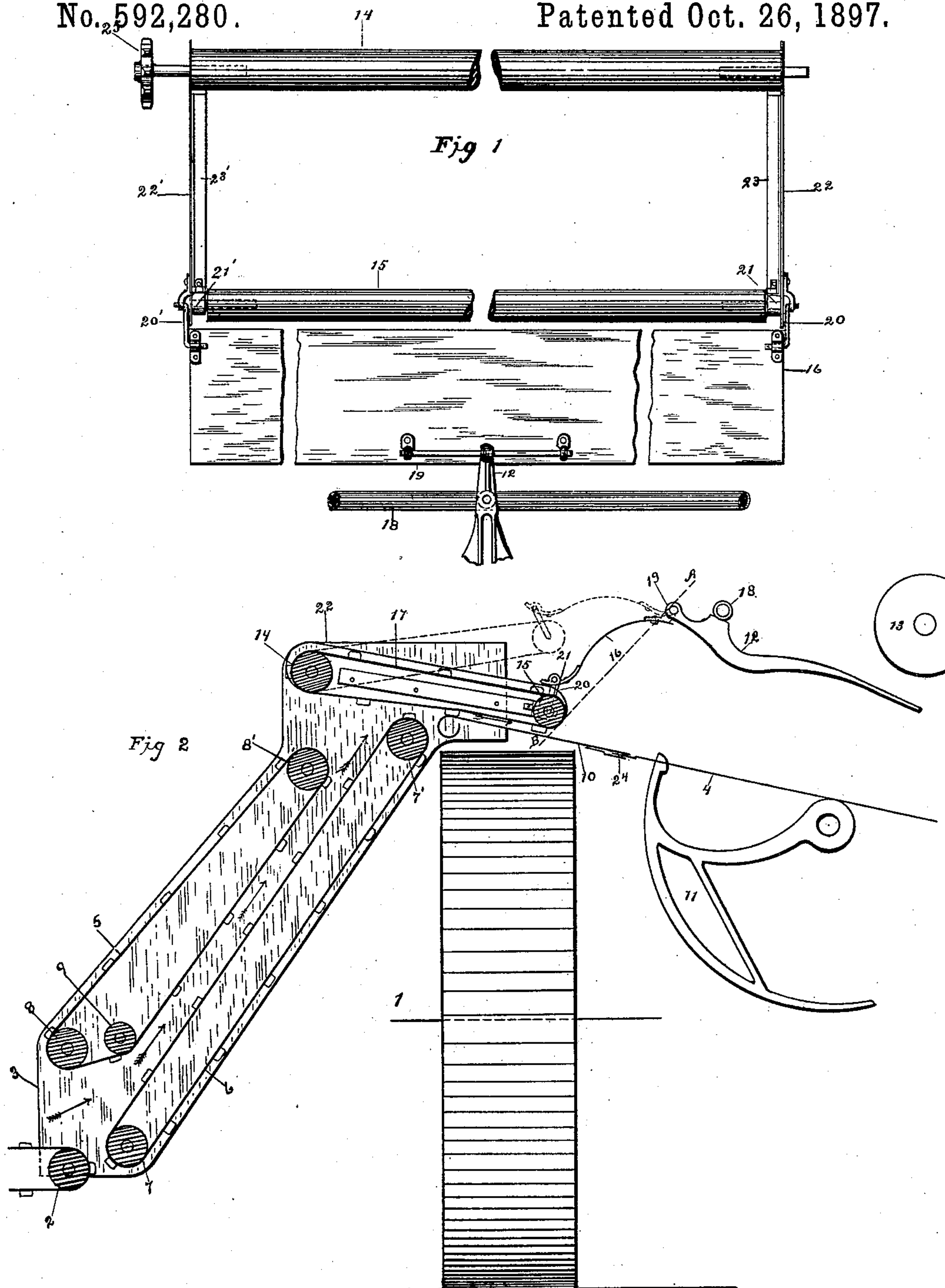
(No Model.)

2 Sheets—Sheet 1.

H. F. CRANDALL.
HARVESTER ELEVATOR.

No. 592,280.

Patented Oct. 26, 1897.



WITNESSES

J. C. Holmes,
Harold O. Plater.

INVENTOR

By His Attorney

Henry F. Crandall
E. W. Burgess

(No Model.)

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Fig 3

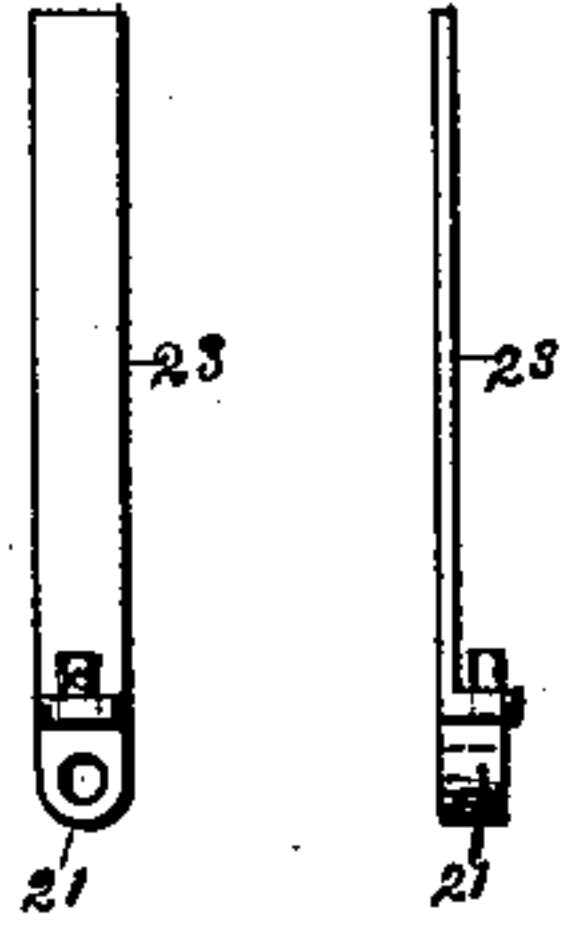


Fig 4

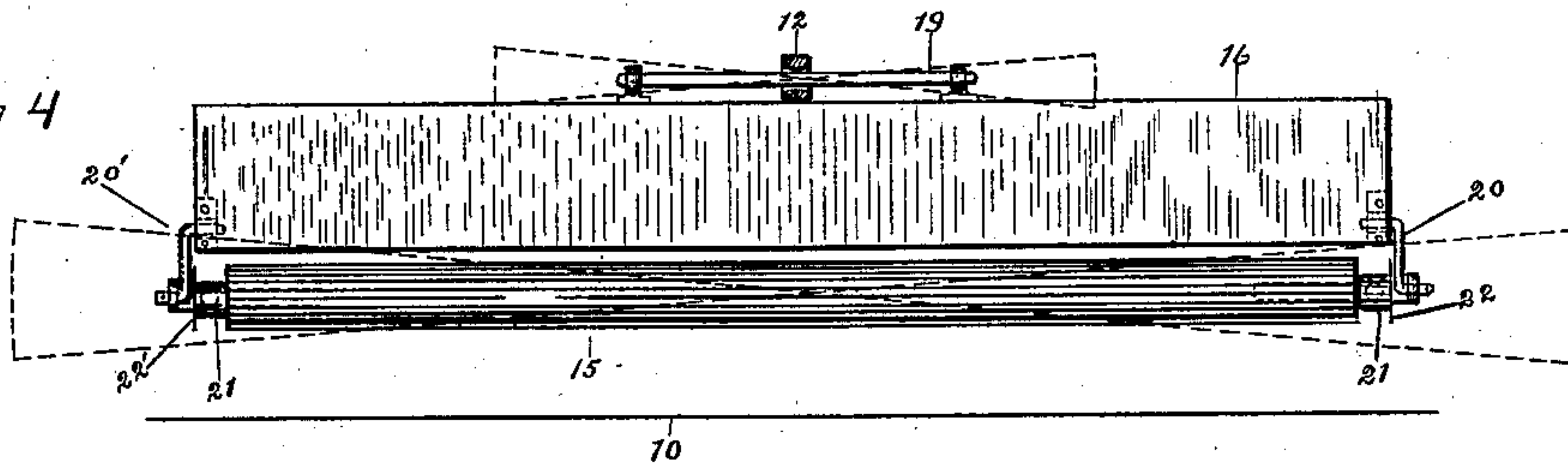
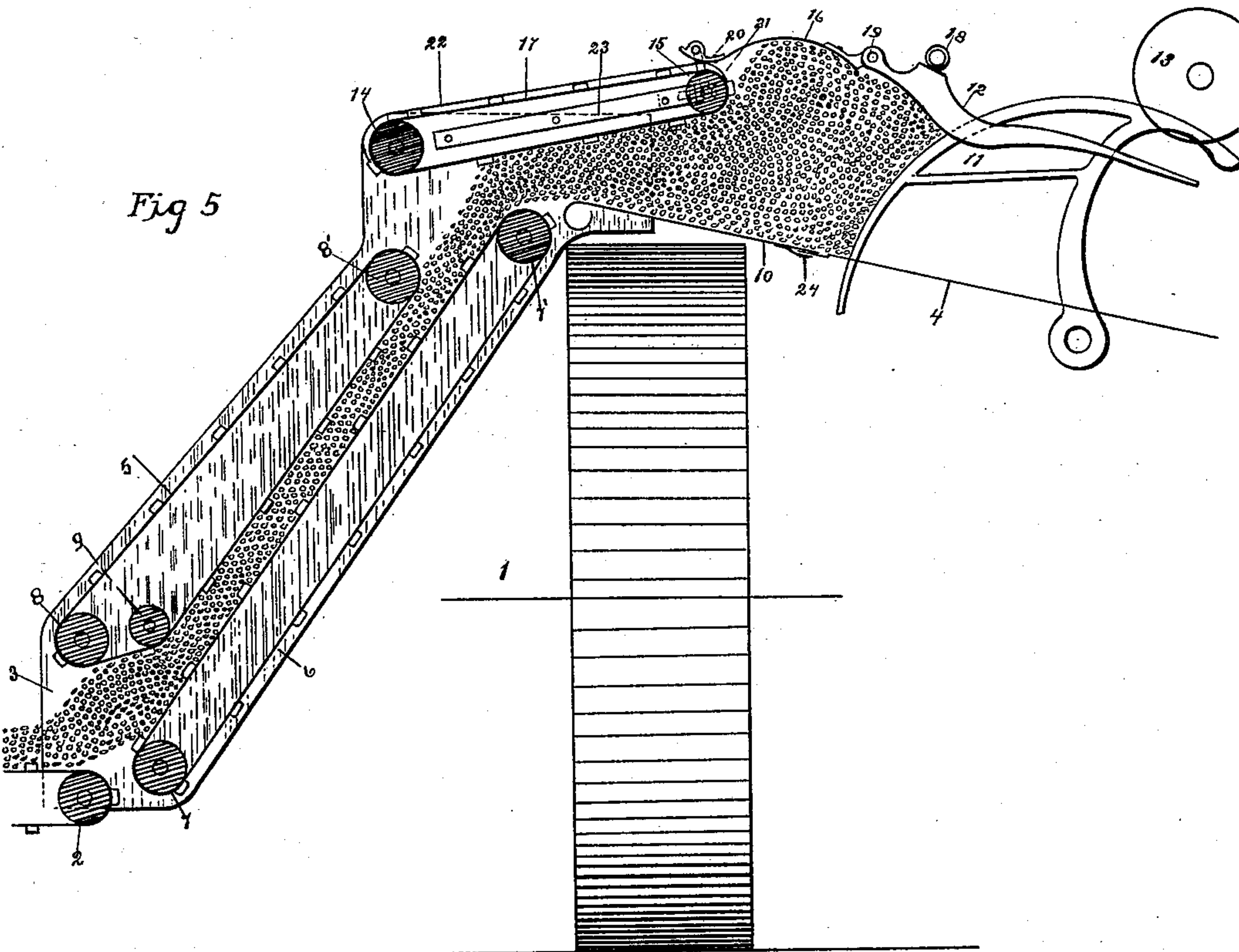


Fig 5



WITNESSES

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UNITED STATES PATENT OFFICE.

HENRY F. CRANDALL, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE MILWAUKEE HARVESTER COMPANY, OF SAME PLACE.

HARVESTER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 592,280, dated October 26, 1897.

Application filed November 23, 1896. Serial No. 613,118. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. CRANDALL, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Harvester-Elevators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification and are designed to show my improvements in connection with those parts of an appropriate harvester, illustration of which is needed to convey a proper understanding of a suitable application of my invention.

My invention is designed to be applicable to that class of harvesters by which the grain is taken from a platform-carrier and elevated and delivered to a binder located upon the stubbleward side of the drive-wheel. Its object is to provide a more positive delivery of the grain to the binding mechanism, to prevent the accumulation of grain between the upper end of the receiving-deck and the adjacent elevator-roller, and to reduce the height of an elevator-harvester as much as possible.

In the drawings, Figure 1 is a plan view illustrating my invention, the section being from left to right across the delivery end of the elevator-carriers and that portion of the binder-deck reaching across the drive-wheel, the deflector-sheet, the pipe-support for the binder attachment, and a portion of the breast-plate, showing the manner of connecting the breast-plate to the deflector-sheet and also the connection between the deflector-sheet and the floating frame. The rollers are shown broken, also the deflector-sheet, and for the purpose of better illustrating my improvements I have omitted the canvas apron. Fig. 2 is a sectional elevation somewhat in the nature of a diagram, the section being from right to left through the elevator and the discharge side of the platform-conveyer at one side and the receiving side of the binder-deck at the other side of the driving-wheel, which appears in elevation, the same being shown without grain in the elevator and some

of the details not pertaining to this invention being omitted. Fig. 3 is a detail drawing of the swivel journal-box supporting the floating roller of the horizontal supplemental carrier shown in Fig. 1. Fig. 4 is a section in detail in a line drawn downward from the receiving end of the breast-plate to the fixed binder-deck, as shown by line A B, Fig. 2, showing the manner in which provision is made for an oscillating or vibrating movement in addition to the up-and-down one of the horizontal carrier. Fig. 5 is a sectional elevation similar to Fig. 2 and designed to show the action of the grain upon the floating supplemental carrier, it being shown as forced upward around its pivotal connection with the elevator-frame, carrying the grainward side of the deflector with it and providing a storage receptacle for the accumulating grain when held back from the binding mechanism by the action of the needle.

1 is the drive-wheel; 2, the platform-carrier roller at the discharge side. 3 is the elevator side sheathing; 4, the shifting binder-deck; 5, the upper elevator-apron; 6, the lower elevator-apron; 7 and 7', respectively, the lower and upper rollers of the lower apron; 8 and 8', respectively, the lower and upper rollers of the upper apron. 9 is a supplemental lower roller of the upper apron. It will be understood that the terms "upper" and "lower" as applied to these rollers correspond to the "discharge" and "receiving" side as applied to carriers.

10 is a fixed deck located above the drive-wheel and extends from the grainward side thereof to the movable binder-deck upon the stubbleward side of the machine.

11 is the needle; 12, the breast-plate; 13, the tier-cam; 14 and 15, respectively, the receiving and discharging rollers of the supplemental transverse conveying-apron; 16, the deflector-sheet; 18, the pipe-support on binder; 17, the supplemental carrier-apron; 19, sliding and pivotal connection between breast-plate 12 and deflector-sheet 16; 20 and 20', short pivotal links connecting the grainward edge of the deflector-sheet to the stubbleward end of the transverse floating frame carrying the supplemental apron and rollers; 21 and 21', swivel journal-box forming bear-

ings for the journals of roller 15 in swinging frame-pieces 22 and 22'. These frame-pieces are shown as being made of sheet metal and having the stiffening-pieces 23 and 23', carrying the swivel-boxes 21 and 21', riveted to them, and are pivoted at the receiving-roller journals. This receiving-roller is journaled in any convenient manner (not specifically shown) at the front and rear of the elevator 10 in the same manner as the other rollers and is located nearly in a vertical line above the upper roller of the upper elevator-apron. The upper roller of the upper elevator-apron is located at a point below and grainward of 15 the upper roller of the lower elevator-apron. The upper roller of the lower elevator-apron is located at a point grainward of the drive-wheel and at a height to bring the upper part of its periphery a little below the plane of the 20 fixed binder-deck 10. This fixed binder-deck is preferably made of sheet metal and has its grainward side rolled in tube formation, affording required stiffness and presenting a rounded surface to meet the flow of grain and 25 contiguous moving carrier, its lower side overlapping the movable binder-deck 4 and held in position by clips shown at 24, Figs. 2 and 5.

With my improvements in operation the 30 grain is received from the platform-carrier by the elevator carrier-aprons, and between them it is carried to a height corresponding with the plane of the fixed binder-deck, and there it meets the action of the supplemental floating or swinging carrier and is positively forced in practically a horizontal 35 plane across the opening between the fixed deck and the upper roller of the lower elevator-apron, and thence across this deck to a 40 point within the compass of the packing and binding mechanism. As the volume of grain increases the supplemental conveyer is carried upward around its pivot, as shown by dotted lines in Fig. 2, and as it diminishes 45 the conveyer swings down until the slats on the apron come in moving contact with the rounded receiving end of the fixed deck, and I prefer to have it drop low enough to allow the surface of the apron to touch said rounded 50 end when taut and to bend up to allow the slats to pass the edge of the deck. This action effectually prevents any accumulation of grain between the deck and the adjacent elevator-roller, as the action of this 55 floating carrier is as effective with a very small quantity of grain as with a larger, allowing none to accumulate.

In harvesting grain it frequently happens that the butts will be filled with a short 60 growth of grass or weeds and are heavier and bulkier, and the carrier, pressing heavier on this portion, will advance it faster, or, again, other conditions are present and the heads are bulkier and they will get in advance of the butts. To meet these conditions, I have made provision for an oscillatory or vibrating movement of my supple-

mental carrier, as shown in Fig. 4. The deflector-sheet is supported by the rod 19, passing freely through an eye at the grainward 70 end of the breast-plate 12, and the grainward edge of the deflector-sheet is pivotally connected by the links 20 and 20' to the rising-and-falling end of the frame-pieces 22 and 22', and the journal-bearings 21 and 21' 75 being free to accommodate themselves to any movement in this respect by reason of their swivel connections with the end of the frame of the supplemental carrier it follows that the delivery end of the floating supplemental 80 carrier is free to swing or vibrate to a limited extent upon its supporting-point, as shown by dotted lines in Fig. 4.

Any of the usual modes of driving the receiving-roller of the supplemental carrier 85 may be employed. I have shown a sprocket-wheel 25 attached to the lengthened journaled end, from which flexible connection is made to any of the driving mechanism in some one of the well-known ways. 90

It is when loose grain is allowed to accumulate at the delivery end of the elevator-aprons and lying loosely across the opening between the deck and elevator-roller that it is drawn down between them. A number of 95 devices have been used in trying to prevent this. All so far have been ineffective in preventing the evil, but with my improved supplemental apron, rising and falling with the stream of grain and so arranged as to 100 sweep the last single straw across the opening, the trouble is entirely overcome.

I am aware that I am not the first to use a supplemental conducting-carrier moving in practically a horizontal plane above the delivery 105 end of the elevator-carriers, the same having been in use before; but I have no knowledge of said supplemental conducting-carrier being pivoted above and grainward of the upper roller of the lower elevator-apron, 110 with its stubbleward or delivery roller overhanging the binder-deck and being free to ride and fall or float upon the stream of grain.

What I claim, and desire to secure by Letters Patent, is— 115

1. In a harvesting-machine, the combination with the elevator and binder, of a vertically-swinging auxiliary carrier, pivotally connected at its grainward end with the elevator-frame and extending therefrom transversely over the upper end of the elevator, and a deflector-sheet pivotally connected with the frame portion of the binder and with the vertically-movable delivery end of the auxiliary carrier, substantially as shown and 125 specified.

2. In a harvesting-machine designed to elevate the grain above the drive-wheel, and convey it to a binder located upon the stubbleward side of the drive-wheel, the combination 130 of the platform-carrier, the elevator-carriers, the supplemental, overhanging, vertically-swinging, conducting-carrier, having pivotal connection at its receiving end, with the ele-

5 vator-frame at a point above, and grainward of, the upper roller of the lower elevator-apron and moving in a transverse plane across the delivery end of the elevator-carriers, substantially as described.

10 3. In a harvesting-machine, the combination of the platform-carrier, the drive-wheel, the binder-deck, the elevator-carriers, the supplemental, swinging conducting-carrier, 15 having its frame pivotally connected with the elevator-frame at a point above, and grainward of the upper roller of the lower elevator-apron, and moving in a transverse plane across the delivery end of the elevator-carriers, of the deflector-sheet pivotally con- 20 nected with the stubbleward side of the supplemental carrier-frame, of the breast-plate and the pivotal sliding connection between the breast-plate and the stubbleward side of the deflector-sheet, substantially as shown and described.

25 4. In a harvesting-machine, the combination of the platform-carrier, the elevator-carriers, the drive-wheel, the fixed binder-deck, the supplemental, floating, conducting-carrier frame, pivotally connected with the ele-

vator-frame, its receiving and discharge rollers, its carrier-apron, its swivel journal-bearings at the ends of the discharge-roller, its deflector-sheet, its link connection with said 30 deflector-sheet, and the sliding binder-deck, substantially as and for the purposes specified.

5. In a harvesting-machine, the combination of the platform-carrier, the elevator-carriers, the drive-wheel, the fixed binder-deck, 35 the supplemental, swinging conducting-carrier frame, pivotally connected above the upper rollers of the elevator-carriers, and extending transversely across the delivery end of said carriers, stubbleward over the binder-deck to the binding mechanism, its receiving 40 and discharge rollers, its carrier-apron, and a means for allowing the discharge-roller to have an oscillatory or vibrating movement, conjunctively with its vertically-swinging 45 movement, in relation to the deck of the receiving-roller, substantially as shown and described.

HENRY F. CRANDALL.

Witnesses:

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B. C. WAIT.