

No. 677,266.

Patented June 25, 1901.

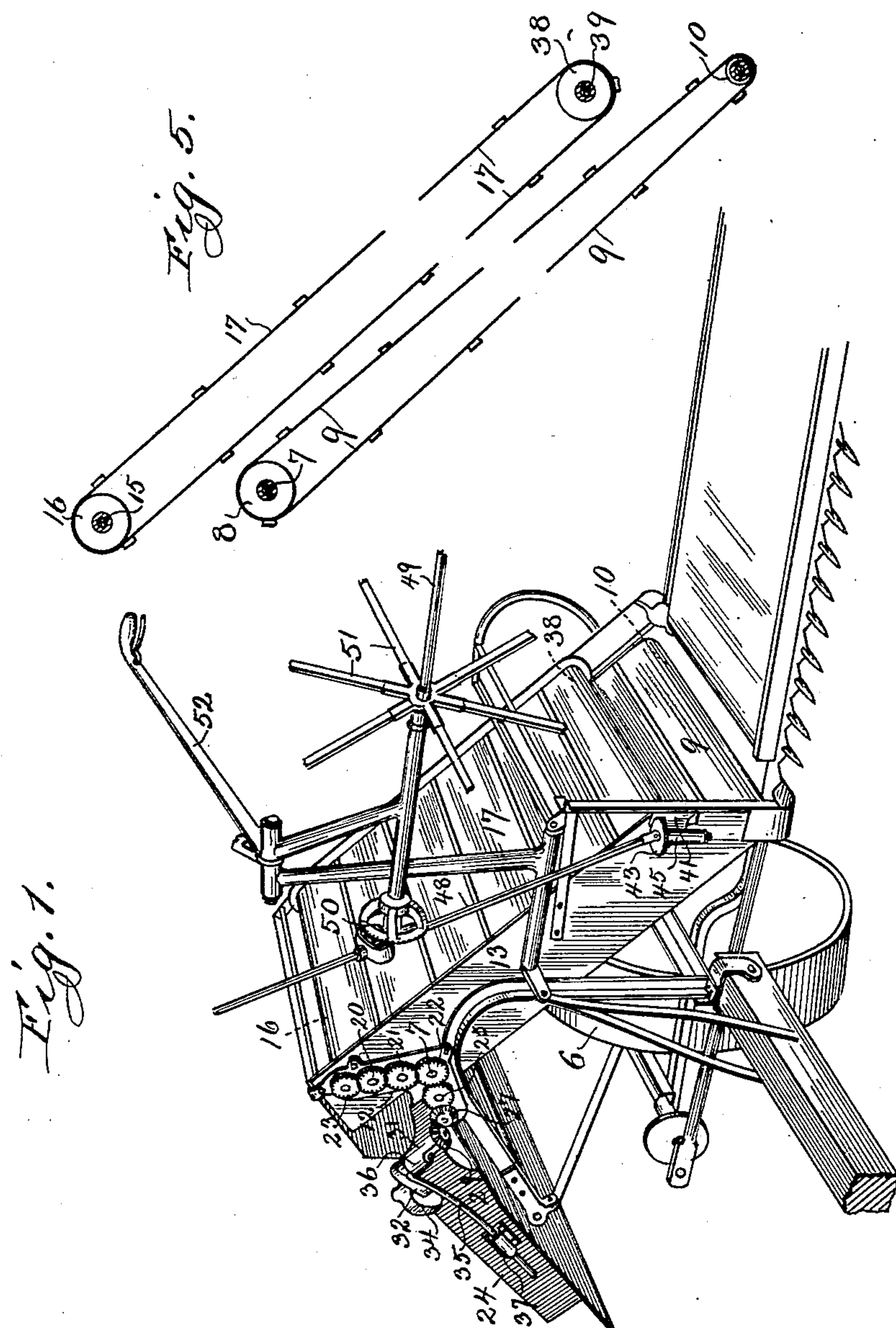
G. L. PHELPS.

REEL DRIVING MECHANISM FOR HARVESTING MACHINERY.

(Application filed Nov. 17, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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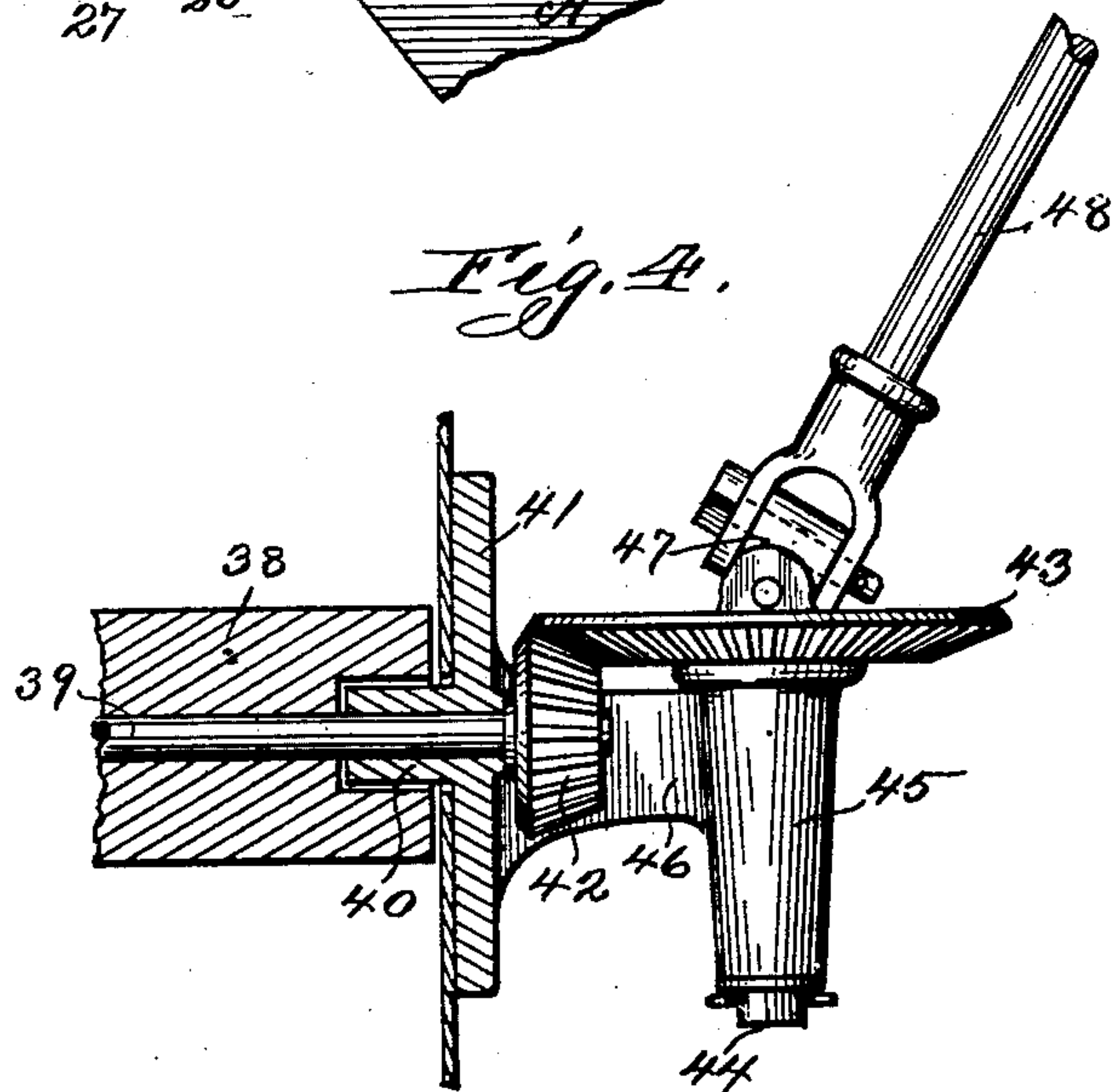
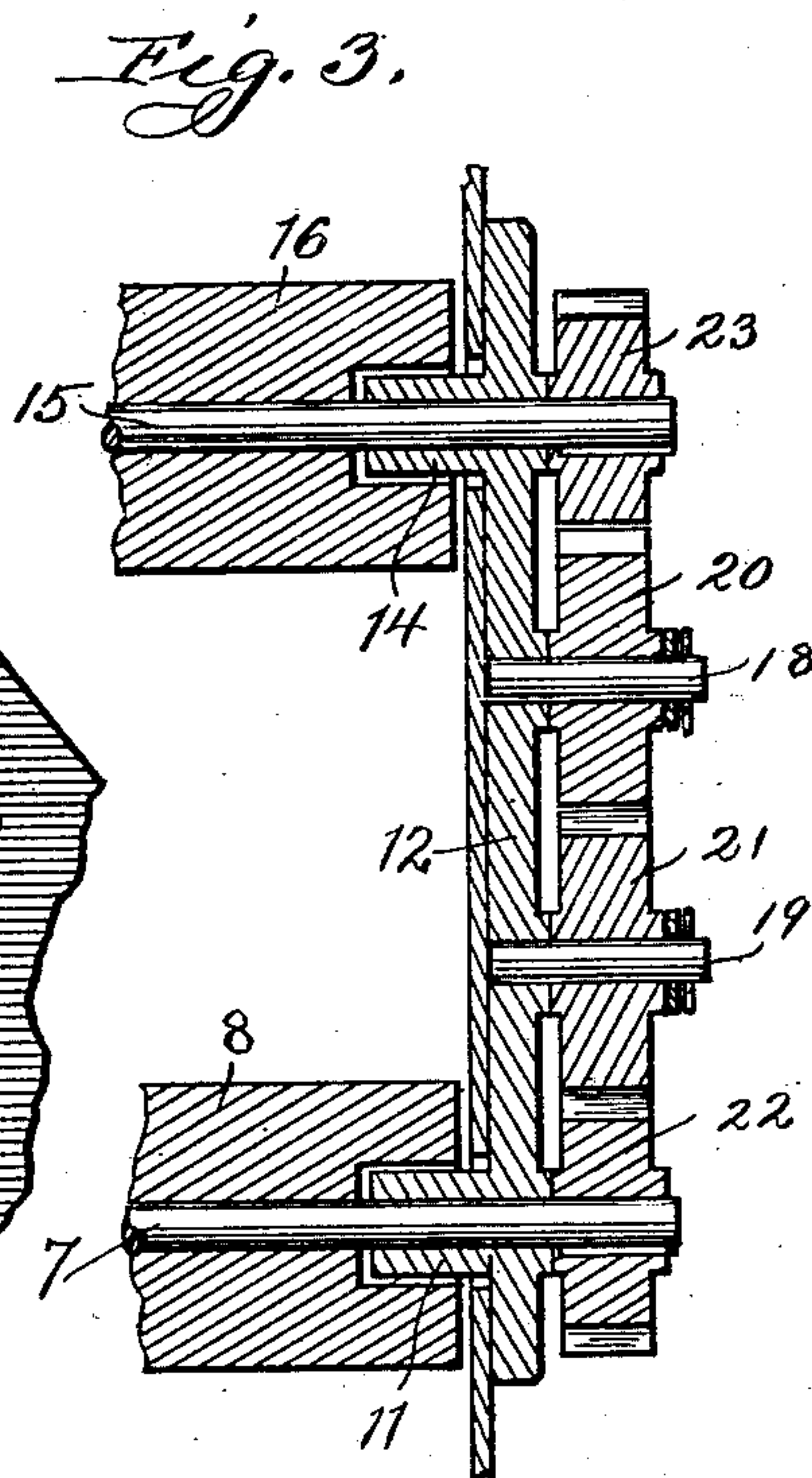
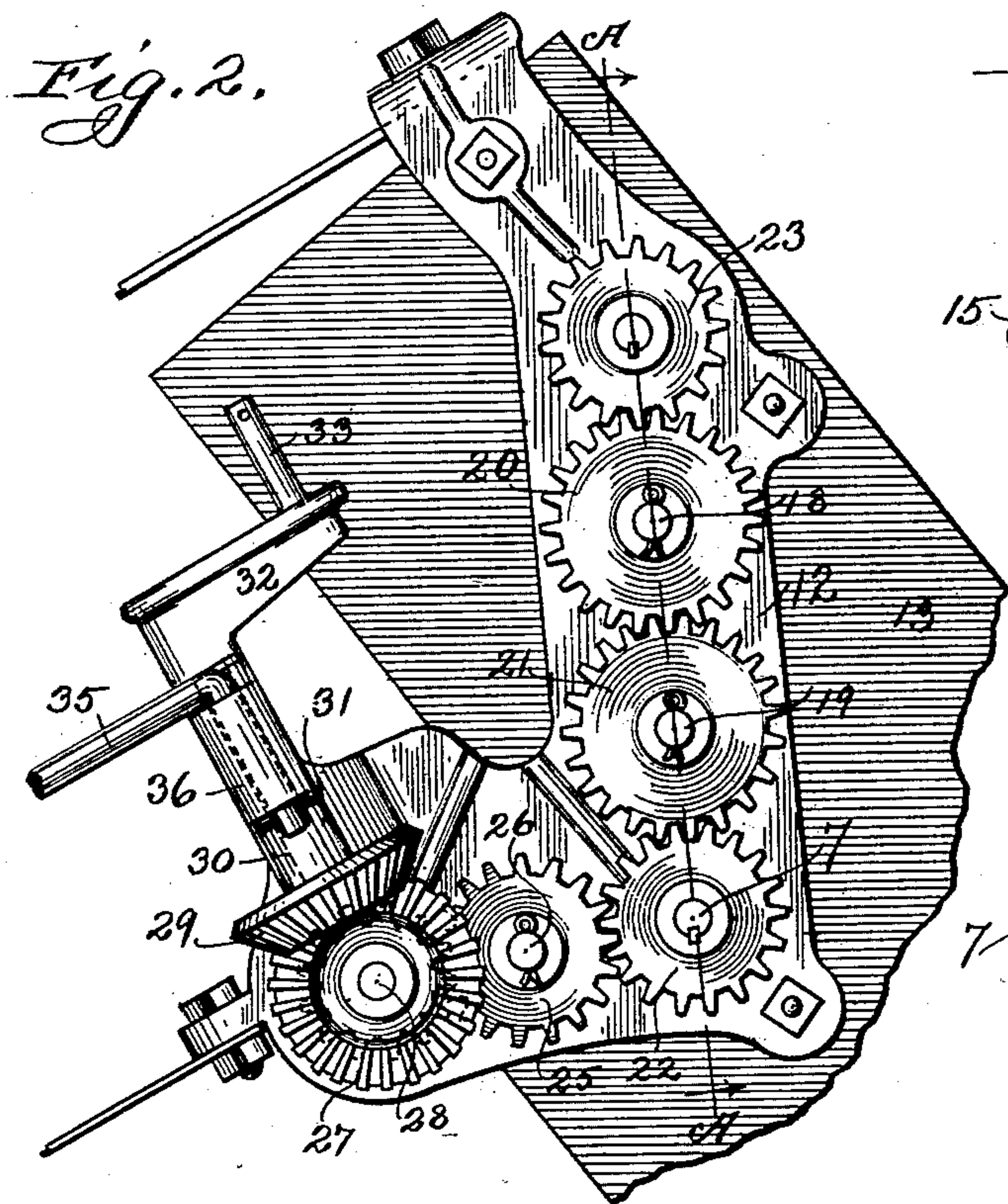
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UNITED STATES PATENT OFFICE.

GEORGE L. PHELPS, OF WEST PULLMAN, ILLINOIS, ASSIGNOR TO THE
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REEL-DRIVING MECHANISM FOR HARVESTING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 677,266, dated June 25, 1901.

Application filed November 17, 1900. Serial No. 36,805. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. PHELPS, a resident of West Pullman, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Reel-Driving Mechanism for Harvesting Machinery, of which the following is a specification.

My invention relates to certain new and useful improvements in reel-driving mechanism for grain-harvesting machinery, and is designed to produce such mechanism especially adapted to machines having open-ended elevators as will be simple and compact in its construction and one that will also be capable of yielding automatically in case sufficient force is applied to it, so as to prevent any accidental breakage in case the reel meets with an obstruction or becomes clogged in heavy tangled grain or otherwise.

Referring now to the accompanying sheets of drawings, in which the same reference characters are used to designate identical parts in all the views, Figure 1 is a perspective view of a portion of the self-binding harvester, illustrating so much thereof as is necessary to disclose the features of my present invention. Fig. 2 is an end elevation, on an enlarged scale, showing the details of the gear mechanism for transmitting movement from the top roller of the lower canvas to the top roller of the upper canvas and to the oscillating butt-adjuster. Fig. 3 is a section of the same mechanism on the line A A of Fig. 2. Fig. 4 is a detail, partly in section, showing how power is transmitted from the lower roller of the upper elevator-canvas to the reel-driving shaft; and Fig. 5 is a sectional view taken just inside of the front side board of the elevator, showing the relative diameters of the apron-rollers.

In illustrating my invention I have shown it as applied to the customary harvester construction, in which the power developed by the movement of the main wheel 6 is transferred to the various moving parts by the customary mechanism, except as hereinafter indicated, and which need not be described. The power is transmitted from the main wheel 6 by the customary mechanism to the shaft 7, to which is secured the upper roller 8 of the lower elevator apron or canvas 9.

This lower elevator apron or canvas 9 passes over the lower roller 10, which is journaled in the side boards of the elevator in the customary manner. The shaft 7 has its forward end mounted in the tubular bearing 11, which forms a part of the bearing-plate 12, which is bolted to the upper end of the front side board 13 of the elevator in the position clearly shown in Figs. 1 and 2. At a suitable distance above the roller 8 is the tubular bearing 14, formed in the plate 12, which supports one end of the shaft 15, to which is secured the upper roller 16 for the upper canvas or apron 17. Mounted upon the plate 12, preferably in a line between the bearings 11 and 14, are the bearing pintles or studs 18 and 19, upon which are mounted the idle gear-pinions 20 and 21, which connect the gear-pinions 22 and 23, rigidly secured upon the outer ends of the shafts 7 and 15, respectively. By this construction it will be seen that the rotation of the shaft 7 will be transmitted at the same speed to the shaft 15, so that the upper canvas 17 will be driven directly from the shaft 7. As a convenient means of oscillating the butt-adjuster 24 I provide the gear-pinion 25, journaled on the stud 26, projecting outwardly from the plate 12, the pinion 25 being driven by the pinion 22, with which it meshes, and in turn meshes with a gear-pinion (the position of which is shown in dotted lines in Fig. 2) secured upon the back of the bevel gear-pinion 27, also mounted on the stud 28, projecting outwardly from the plate 12 and in turn meshing with the bevel gear-pinion 29, secured upon the shaft 30, which is journaled in the bearing formed in the arm 31 of the plate 12. The shaft 30 has at its upper end the crank-arm 32, carrying the pin 33, upon which is pivoted a bearing 34, secured to the butt-adjuster 24, so that the rotation of the shaft 30 will cause the oscillating movement of the butt-adjuster 24, its outer end being guided in its movement by the substantially L-shaped bearing-rod 35, which has its L portion mounted to swing in the bearing 36, formed in the arm 31 of the plate 12, while its outer end reciprocates through the bearing-sleeve 37, secured upon the outer face of the butt-adjuster 24. The lower roller 38 of the upper canvas 17 is secured upon the shaft 39, which is mounted

at its forward end in the bearing 40, forming a part of the bearing-plate 41, bolted or otherwise secured at the top of the lower end of the side board 13. This shaft 39 has rigidly
 5 secured upon its outer end the bevel gear-pinion 42, which meshes with the bevel gear-wheel 43, whose vertical shaft 44 is mounted in the elongated bearing 45, terminating the arm 46, projecting forwardly from the plate
 10 41. This bevel gear-wheel 43 has centrally secured thereto on its upper side, by means of the universal joint connections 47, the tumbling-shaft 48, which drives the reel-shaft 49 by the customary connections therefor, (illus-
 15 trated at 50.) These connections are of the ordinary construction, such that when the position of the reel 51 is shifted, by means of the lever 52, the connections of the shafts 48 and 49 will be maintained whatever the position
 20 of adjustment of the reel. By reference to Fig. 5 it will be seen that I have made the rollers 8, 16, and 38 of a larger size than usual, so that the canvas 17, which thus serves as a belt to transmit motion from the shaft 15
 25 to the shaft 39 for the purpose of driving the reel, will have greater contact-surfaces with said rollers, so as to transmit the power without any possibility of slipping unless resistance is opposed to the reel, in which case the
 30 canvas will slip over the roller 38, and thus prevent any breaking of the reel by any accidental and unwonted resistance that may be opposed thereto.

The operation of the device will be readily
 35 apparent and needs no detailed explanation. It will be apparent that with the construction herein shown and described I have devised an extremely compact and simple mechanism for driving the upper canvas from the lower
 40 canvas, and through that driving the reel, while at the same time this mechanism is made yielding to prevent breakage without the necessity of the interposition of the friction-clutch which has sometimes been pro-
 45 vided in connection with the reel-driving mechanism.

While I have shown my invention as embodied in the form which I at present consider best adapted to carry out its purposes,
 50 it will be understood that it is capable of modifications and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the art.

55 What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a harvesting-machine, the combination of the canvas-rollers 16 and 38, and the canvas 17 coöperating therewith, with the
 60 reel, driving connections between the reel and the roller 38, and means for driving the roller 16, substantially as and for the purpose described.

2. In a harvesting-machine, the combina-
 65 tion of the canvas-rollers 16 and 38, and the

canvas 17 coöperating therewith, with the reel, driving connections between the reel and the roller 38, and means for driving the roller 16 comprising the shaft 7, and the shaft 15 upon which the roller 16 is secured, and gear
 70 connections between said shafts 7 and 15, substantially as and for the purpose described.

3. In a harvesting-machine, the combination of the canvas-rollers 16 and 38, and the canvas 17 coöperating therewith, with the
 75 reel, driving connections between the reel and the roller 38, and means for driving the roller 16 comprising the shaft 7, and the shaft 15 upon which the roller 16 is secured, and gear
 80 connections between said shafts 7 and 15 consisting of the pinions 22 and 23 secured on said shafts and the interposed idle pinions 20 and 21, substantially as and for the purpose described.

4. In a harvesting-machine, the plate 12
 85 adapted to be secured to the upper end of an elevator side board and having the pintles 18, 19, 26 and 28 thereon and the bearings 31 and 36 therein, in combination with the crank-shaft 30 in the bearing 31, said crank-
 90 shaft having the pinion 29 thereon, the bearing-rod 35 in the bearing 36, the shafts 7 and 15 each having one end journaled in the plate 12, the gear-pinions 22 and 23 secured to said
 95 shafts 7 and 15 respectively, the gear-pinions 20, 21, 25 and 27 mounted upon the pintles 18, 19, 26 and 28 respectively, and meshing substantially as described, and the butt-ad-
 100 juster 24 pivoted on the crank of the shaft 30 and engaging the rod 35.

5. In a harvesting-machine, the combination with a pair of rollers and a canvas connecting said rollers, of a reel, power-trans-
 105 mitting connections between one of said rollers and the reel, and means for driving the other roller, substantially as and for the purpose described.

6. In a harvesting-machine, the combination of a top and bottom roller and the canvas coöperating therewith, of a reel, positive
 110 driving connections between the reel and the bottom roller, and means for driving the top roller, substantially as and for the purpose described.

7. In a harvesting-machine, the combination of the top and bottom rollers of the upper elevator and the canvas coöperating there-
 115 with, of the reel, positive driving connections between the reel and the bottom elevator-roller, and means for driving the top roller, comprising the shaft of the top roller of the
 120 lower elevator-apron, the shaft 15 upon which the top roller of the upper elevator-apron is secured, and gear connections between said shafts, substantially as and for the purpose
 125 described.

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Witnesses:

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