

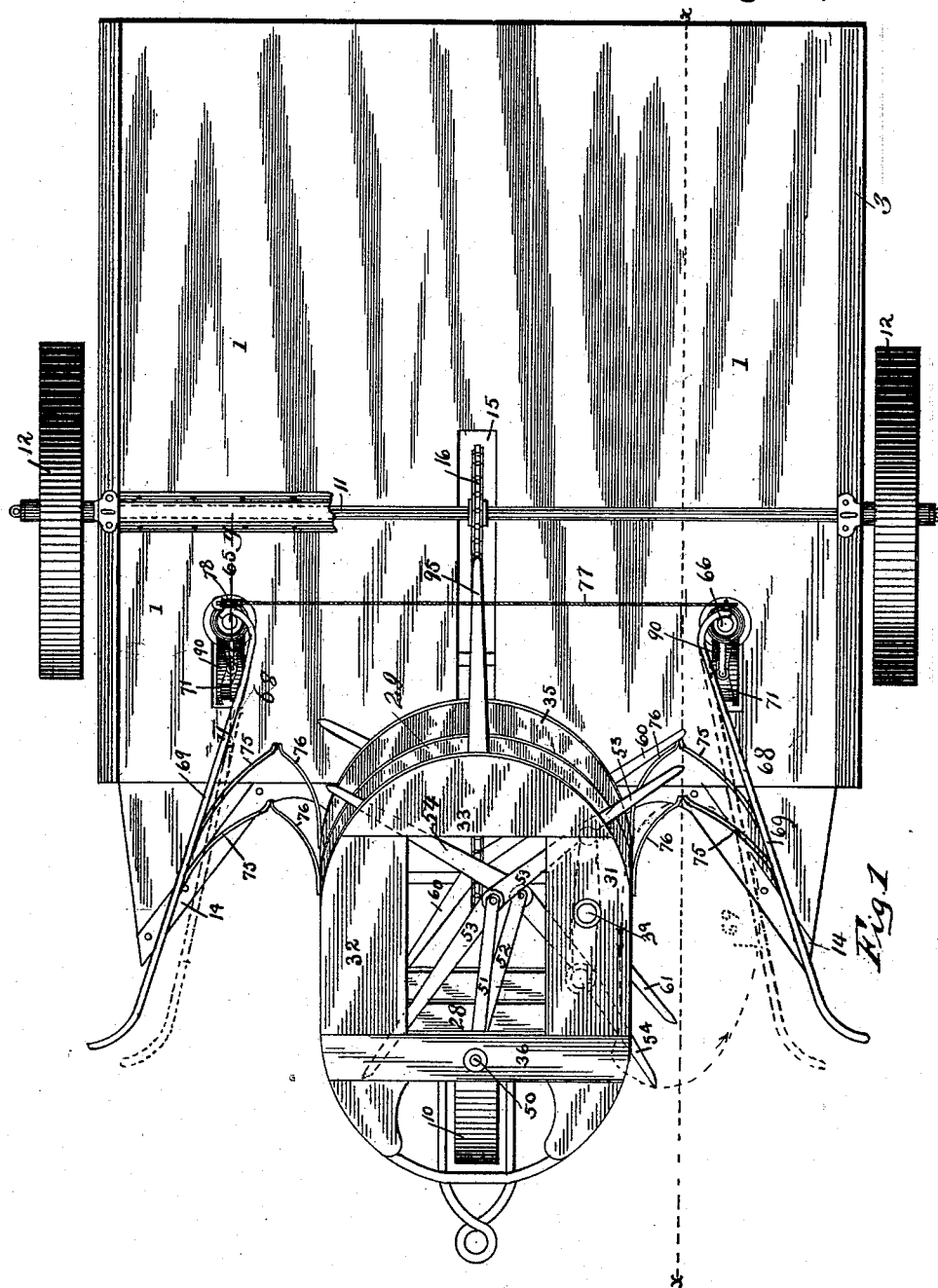
(No Model.)

4 Sheets—Sheet 1.

W. K. LIGGETT.
CORN HARVESTER.

No. 524,968.

Patented Aug. 21, 1894.



WITNESSES:

H. B. Bradshaw
E. C. Bragg.

INVENTOR

William K. Liggett

BY

Staley and Shepherd
ATTORNEYS.

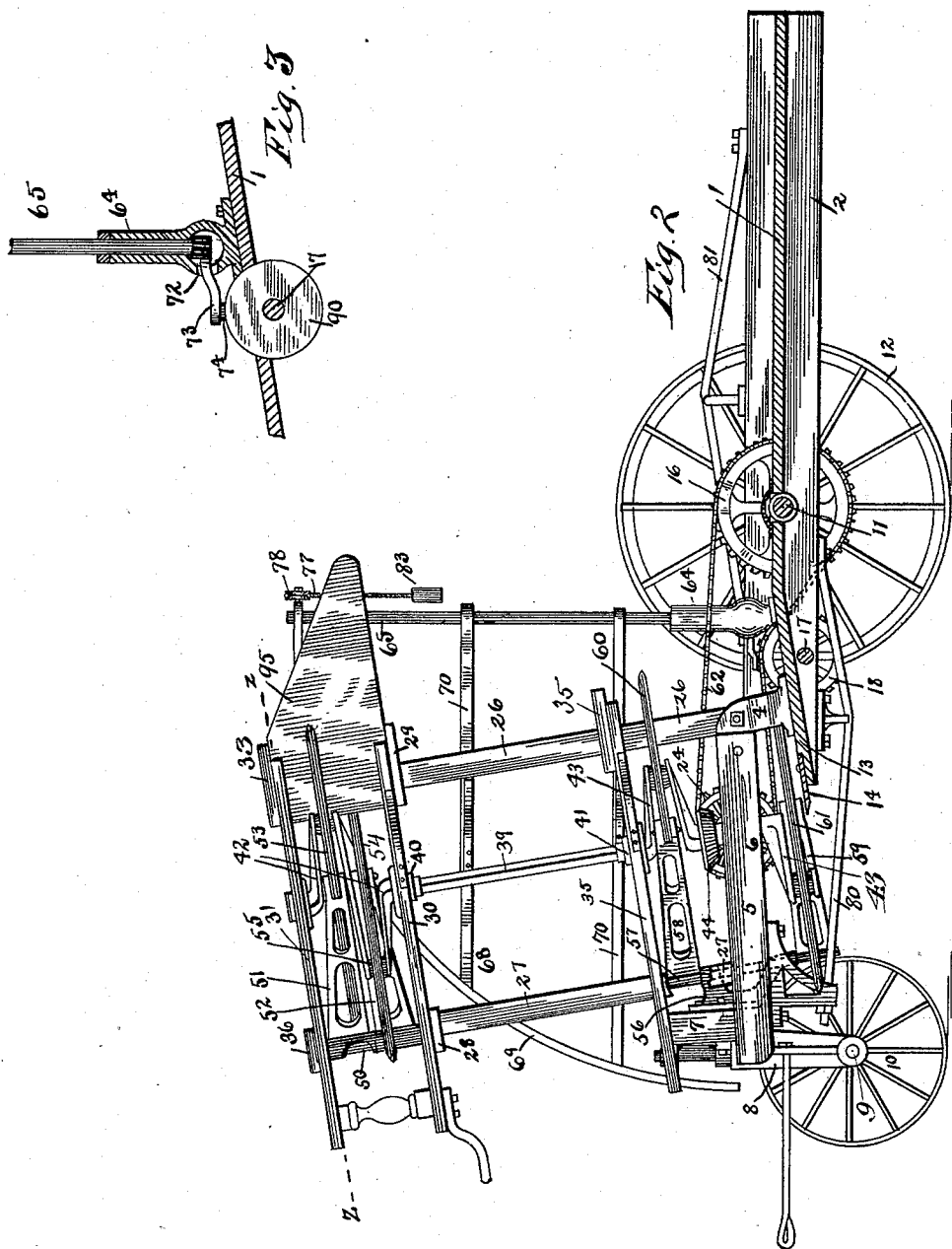
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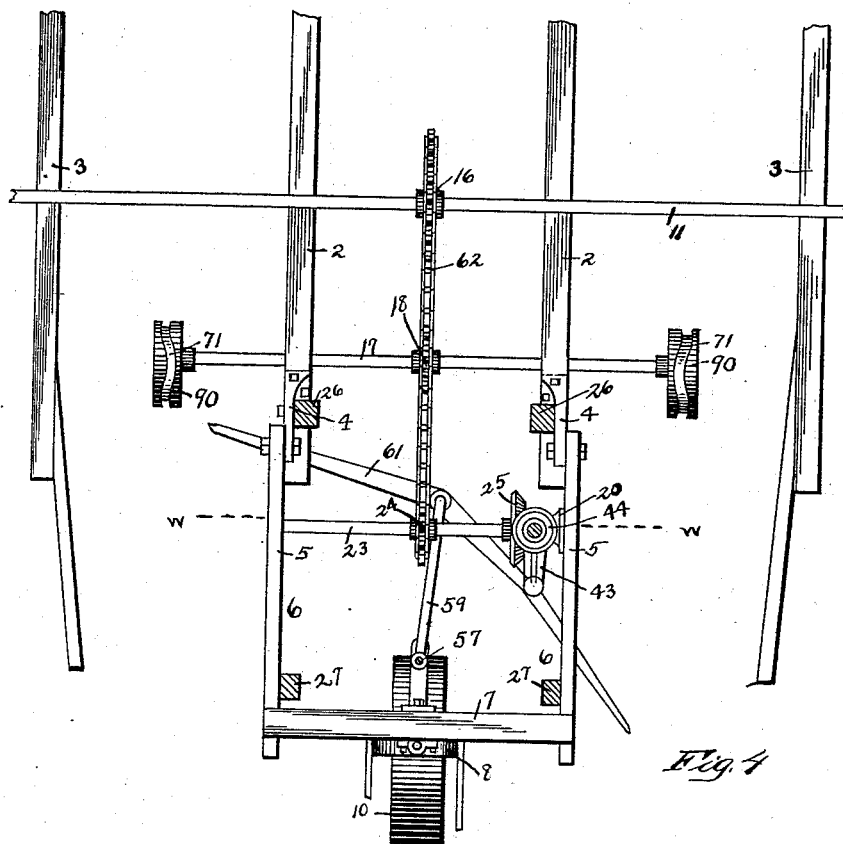


Fig. 4

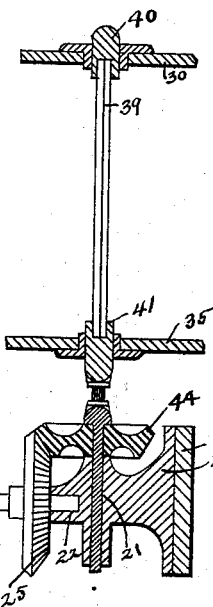


Fig. 5

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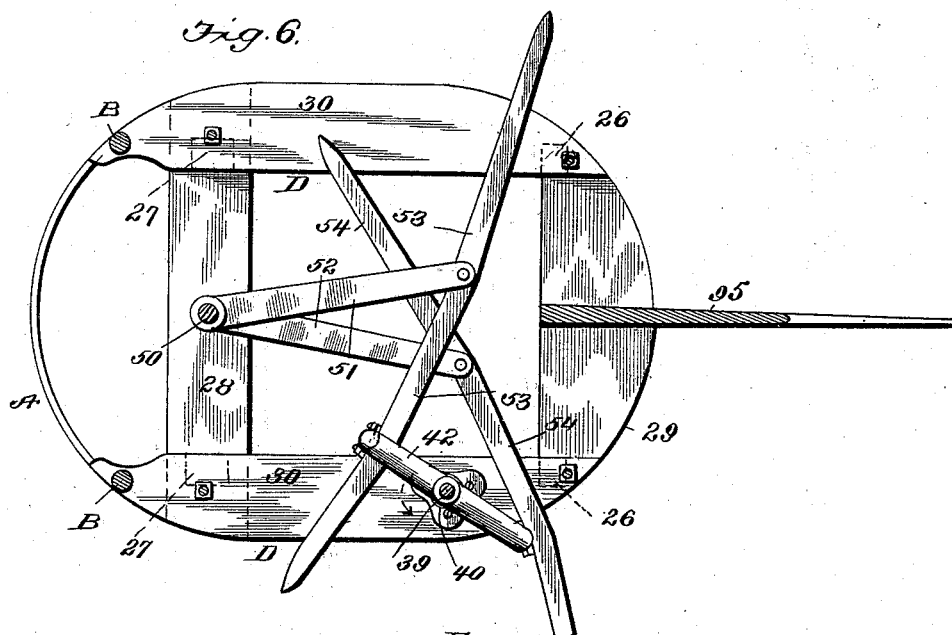
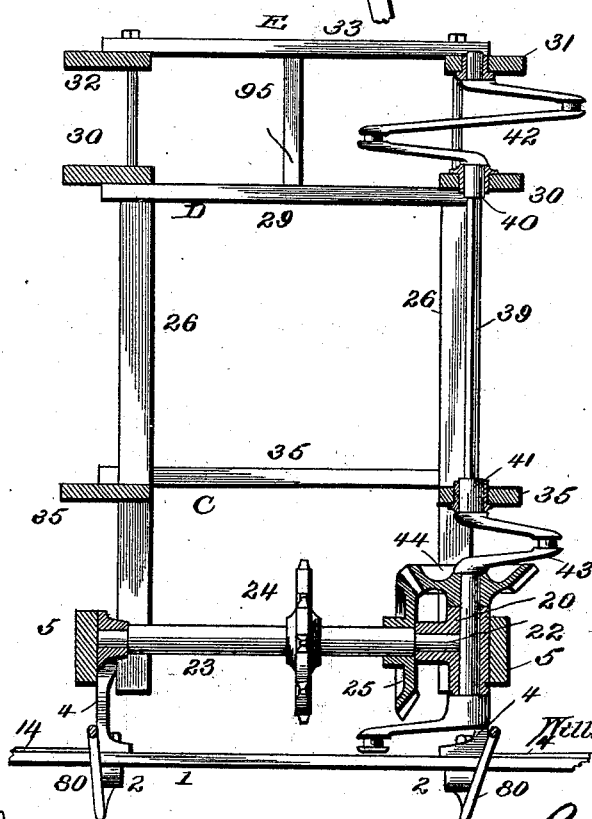


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM K. LIGGETT, OF COLUMBUS, OHIO.

CORN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 524,968, dated August 21, 1894.

Application filed August 11, 1892. Serial No. 442,794. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM K. LIGGETT, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Corn-Harvesters, of which the following is a specification.

My invention relates to corn harvesters and the objects of my invention are, to provide a machine of this class of superior construction and operation; to construct the same without complication; to produce a positive action of the parts thereof; to admit of the corn being handled and cut in a simple and convenient manner; and to produce other improvements which will be more specifically pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of my improved harvesting machine. Fig. 2 is a sectional view on line *xx* of Fig. 1. Fig. 3 is a detail sectional view on line *yy* of Fig. 1. Fig. 4 is a plan view of a part of the lower framework of my machine from which for the sake of clearness is omitted various parts of the mechanism which is arranged thereon or above the same and Fig. 5 is a central sectional view of the gathering arm operating shaft and its gear connections. Fig. 6 is a horizontal section on the line *Z—Z* of Fig. 2 on a larger scale. Fig. 7 is a vertical section on the line *W—W* of Fig. 4 on a larger scale, parts being broken away.

Similar figures refer to similar parts throughout the several views.

1 represents the platform, or bed of my machine, the greater portion of which is supported in a horizontal position, as shown. Beneath this platform are arranged parallel supporting beams 2, on the outer sides of which are similar parallel side beams 3, these beams 2 and 3 extending in the direction of the length of the machine. Rising from the forward end portion of the beams 2 are castings 4 to the upper end portions of which are secured the rear ends of the forwardly extending side arms 5 of a frame 6, said side arms being connected at their forward ends by a cross-piece 7. To this cross-piece 7 is pivoted the central portion of a yoke or forked bracket 8, in the downwardly extend-

ing arms of which is journaled a front axle 9 which carries a forward ground wheel 10.

11 represents a transverse shaft which extends through the forward portion of the platform 1 and the outer portions of which are provided with bearings in the outer side frame pieces 3. This shaft carries on the outer sides of the platform rear ground wheels 12. A short distance in front of the shaft 11 the platform bed 1 is inclined downward as shown at 13, the forward edge of this downwardly inclined portion being provided on each side of the center of its width with forwardly projecting and substantially triangular knife plates 14, said knife plates having their forward cutting edges inclined inwardly to points near the front edge of the platform and from thence extending a short distance in front of said platform. Said platform 1 has formed at the center of the width thereof, a slotted opening or mortise 15 and a sprocket wheel 16 is mounted upon the rear shaft 11, said sprocket wheel projecting within said mortise 15.

17 represents a transverse shaft, the ends of which are journaled in the side pieces 2 at a point beneath the inclined portion 13 of the platform, said shaft carrying upon its central portion a small sprocket wheel 18 which also projects within the mortise 15 of the platform. Secured to and projecting inwardly from the inner side of one of the frame arms 5 is a casting or bracket 20, the arm of said bracket having formed therein, a vertical socket 21 and a short horizontal socket or shaft bearing 22 being formed at right-angles therewith in the outer end of said bracket. This socket 22 forms a bearing for the inner end of a horizontal shaft 23, the outer end of which bears in the opposite frame arm 5. Upon the central portion of this shaft 22 is mounted the sprocket wheel 24, while upon the inner end thereof is mounted a bevel gear wheel 25.

26 represents outwardly extending and forwardly inclined frame arms or standards the lower ends of which are bolted or otherwise secured to the frame castings 4. 27 represent two similar standards which extend upwardly and are slightly inclined forward from the inner sides and forward end portions of the frame side arms 5.

The upper ends of the forward and rear

pair of frame standards 26 and 27 are connected by cross-pieces 28 and 29, which in turn are connected at their ends by parallel frame plates 30, from and above which are supported parallel and corresponding therewith, top-plates 31 and 32. The rear ends of these frame plates 31, and 32 are connected by cross plate 33, and the cross plates 30 by means of the cross piece 29 the rear edges of which are curved or form arcs of a circle, as shown. A cross-piece 36 connects the upper sides of the top-plates 32, 31 at their front ends as shown. A short distance above the frame 6, the standards 26, 27 support and are connected by parallel plates 35 which correspond in form and which are parallel with the upper plates 30 31 and 32.

39 represents a shaft which is inclined slightly forward as prescribed for the frame standards, the ends of said shaft body terminating in or being connected with upper and lower heads or hubs 40 and 41, which pass through and are journaled respectively within one of the plates 30 and the corresponding plate 35. Above the plate 30 the head of hub 40 carries or has formed therewith a double crank 42, the latter being adapted to revolve between the plates 30 and 31 and having its upper end journaled in said plate 31. Upon the lower hub 41 is formed or carried a double crank 43, corresponding with the upper crank 42. That portion of the crank-shaft which is between the crank arms of the double-crank 43, passes downward as shown, through the socket or shaft opening 21 of the bracket 20 and carries upon the upper end portion thereof, a bevel gear wheel 44 which gears with the wheel 25 at right-angles therewith.

Connecting the centers of the lengths of the upper frame pieces 36 and 28 is a pin 50, upon the upper and lower portion of which are fulcrumed upper and lower pivot or radius arms 51 and 52. To the outer end of the upper arm 51 is pivoted centrally a rake arm 53, while upon the outer end of the arm 52 is pivoted a central and similar rake-arm 54. The rake-arms 53, 54 are of such length as to cause their outer portions to project beyond the plates 32, 31, 33 and 29. The upper rake-arm is at a point mid-way between the center of its outer ends pivoted to the upper center pin of the upper crank 42, while the lower rake arm 54 is similarly pivotally connected or journaled on the lower center pin of said crank, as indicated at 55. Secured to the inner side of and projecting rearwardly from the forward cross-frame 7 of the lower frame-work is a bracket 56 in the outwardly projecting arms of which is journaled a shaft or pin 57. Upon the upper portion of this shaft 57 is pivoted a pivot or radius arm 58 and upon the lower portion thereof, a corresponding arm 59. 60 and 61 represent respectively lower rake-arms which are pivoted centrally to the outer ends of the arms 58 and 59, and each of which between its cen-

tral pivot points and one of its outer ends is pivoted or fulcrumed on the center pin of one of the crank arms of the crank 43.

62 represents an endless chain or belt which as shown in the drawings, connects the sprocket wheels 16, 18 and 24. Supported in opposite sides of the platform 1 in front of the shaft 11 are brackets or socket pieces 64, which form socket bearings for two oppositely located vertical shafts 65 and 66. Secured to each of the shafts 65 66 is a forwardly extending frame 68, each of said frames consisting of a forward extending and downward and outward curved frame arm 69 which has its upper end connected with the upper end of said shaft and suitable horizontal arms 70 which as shown, connect said outer frame arm with said shaft at desirable points. Upon the shaft 17 at a point in front of each of the brackets 64 is mounted a wheel 90, said wheel having formed in its periphery a groove or camway 71. Affixed to the lower end of each of the shafts 65 and 66 within the body of its bracket 64 and projecting outward through a certain opening 72 in the wall of said bracket is an arm 73 carrying thereon a downwardly projecting pin 74 which is adapted to rest and travel within the camway 71 of the wheel 90.

75, 76 represent spring strips which are secured respectively to the inner sides of the frame 68 and the outer sides of the frame plates 30 35. These spring strips extend rearwardly from their fastenings in curved converging lines, as shown.

77 represents a cord which I may employ as shown in the drawings, said cord passing over a pulley 78 pivoted to a rear extension or projection from the upper end of one of the frame arms 69, and is provided on one end with a weight 83. The remaining end of the cord is as shown, connected with the rearwardly projecting upper end of the opposite arm 69.

As will be observed in the drawings, I may employ suitable brace or stay rods such as indicated at 80 and 81 for the purpose of staying the frame parts of my device.

In the operation of my machine, it is designed that two rows of corn may be cut thereby at a time, the stalks coming in contact with the blades 14 and being as herein-after described carried or pressed upon the platform 1 against the cord 77 until a sufficient number of stalks have accumulated to form a shock. In this operation through the rotation of the ground wheel 12, rotary motion is imparted to the sprocket wheel 16 of the shaft 11 and through the sprocket chain 62 motion is imparted to the wheel 18, its shaft 17 and the shaft and wheel 23, 25. Through the rotation of the wheel 25 rotary motion is imparted through the gear wheel 44 to the shaft 39. The rotation of the shaft 39 will result in revolving the opposite projecting arms of the double cranks 42 and 43 and through the pivoted connections of said

cranks with the arms 53, 54 and 60 and 61 in the outer ends of said rake arms traveling outwardly and rearwardly and thence inwardly in a path located between the shaft supporting frame-work and the frames 68, said path being substantially indicated in dotted lines in Fig. 1 of the drawings. Owing to the fact that the rake arms are connected by separate cranks which project in different directions from the crank-shaft, it will be seen that the paths above described will be followed successively by said arms and that said arms will serve to force or press the stalks inwardly against the cutting blades. It is evident that during this movement of the rake arms an oscillatory movement is imparted to the pivot or radius bars, and that through the rotation of the shaft 17 rotary motion will be communicated to the wheels 90 which through the engagement of the arms 73 with the peripheral groove 71 will result in an inward and outward or vibratory movement of the frames 68. These side frames or guards 68 will serve to prevent the outward movement of the stalks and aid in guiding the latter into the throats of the machine, while the vibratory movement of said guide-frames will operate to prevent the clogging or choking of the stalks within said throats. As the stalks are carried inward by the rake arms they will be pressed between and past the inner ends of the springs 75, 76 and when forced upon the platform 1, said springs will serve to prevent any return of said stalks.

The stalks which are carried as above described, upon the platform assist in retaining a vertical position by a vertical guide plate 95 which extends between the frame-pieces 33 and 29 at the centers of the lengths of the latter and from which point said plate 95 extends rearwardly, as shown.

From the construction and operation above described, it will be seen that the stalks of two rows will be fed inwardly against the knives and deposited upon the platform. It will also be seen that the outward and inward movement of the rake arms will not only serve to press the stalks into cutting position but that said arms will thus be made to aid in straightening up fallen or leaning stalks.

It will be observed that the position and arrangement of the lower rake arm is such as to impart to the latter a shearing movement above the platform knives said arm thus serving to clear the knives of any obstructions such as clinging stalks or weeds and leaving the same clear for their cutting action.

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

1. In a corn harvester, the combination with the knife carrying bed or platform and frame-work, having a passage on each side of a rotary shaft 39 journaled in said frame-work, cranks on said shaft arms, rake arms pivoted to said cranks as described and radius bars pivotally connected with said rake arms at or near the centers of the latter and jointly connected with the frame-work, substantially as and for the purpose specified.

2. In a corn harvester, the combination with a knife, carrying platform and suitable frame-work, of shafts 65 and 66 rising from said frame-work, guard frames 68 supported from said shafts and means for oscillating said shafts in their bearing, substantially as and for the purpose specified.

3. In a corn harvester, the combination with the main knife carrying bed and frame-work rising therefrom, a rotary shaft journaled in said frame-work, one or more cranks on said shaft, one or more rake or gathering arms carried by said crank and a jointed or movable connection between said rake arm and frame-work, of shafts 65 rising from said platform, guard frames 68 supported therefrom and means for imparting an oscillating motion to said shafts, substantially as specified.

4. In a corn harvester, the combination with the main knife carrying frame, having a stalk passage at each side thereof, of a rotary shaft journaled in said frame work, a rake or gathering arm or arms having an end projecting into each stalk passage, a link or other swinging connection connecting the center of the arm to the frame, and a crank between the ends of the gathering arms for operating it so that the respective ends of the arms shall vibrate alternately across the respective stalk passages to gather the stalks, substantially as shown and described.

5. In a corn harvester, the combination of the knife carrying bed or platform, the frame work having a passage on each side, gathering arms, guard frames 68 attached to vertical shafts, arms projected from the said shafts and having pins, and cam grooved disks to receive the said pins and oscillate the said shafts to vibrate the guard frames, substantially as described.

WILLIAM K. LIGGETT.

In presence of—

EMILY E. BRAGG,
FRANK C. HUBBARD.