

No. 659,838.

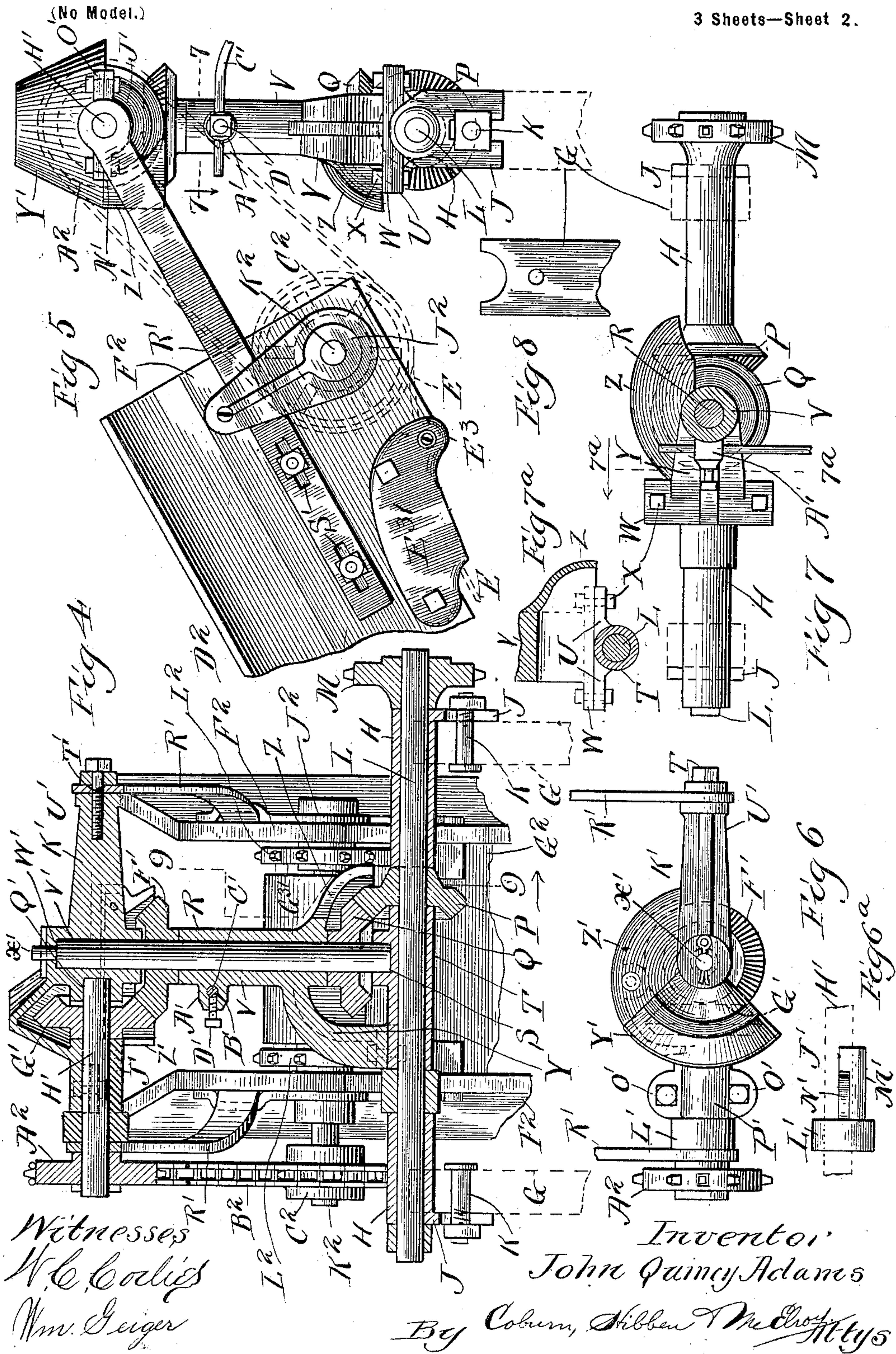
Patented Oct. 16, 1900.

J. Q. ADAMS.

CONVEYER.

(Application filed Dec. 18, 1899.)

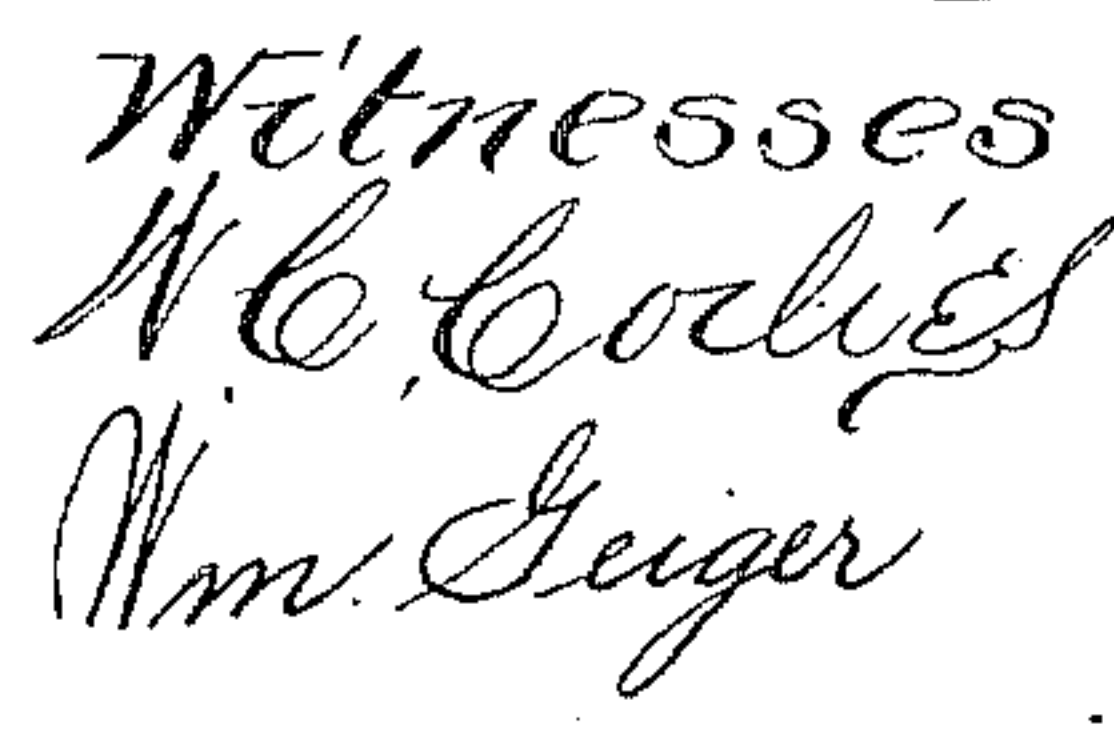
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UNITED STATES PATENT OFFICE.

JOHN QUINCY ADAMS, OF MARSEILLES, ILLINOIS.

CONVEYER.

SPECIFICATION forming part of Letters Patent No. 659,838, dated October 16, 1900.

Application filed December 18, 1899. Serial No. 740,664. (No model.)

To all whom it may concern:

Be it known that I, JOHN QUINCY ADAMS, a citizen of the United States, residing at Marseilles, in the county of La Salle and State of Illinois, have invented certain new and useful Improvements in Conveyers, of which the following is a specification.

My invention relates to so-called "swivel-conveyers" or "drag-feeders" of the universal type that are adapted to be set at any angle to the corn-sheller or other separating mechanism with which they cooperate, so as to enable the contents of a crib to be rapidly and easily conveyed to the sheller.

The first feature of my invention is in the novel construction which I have devised whereby sections may be added to the conveyer without increasing the number of sprocket-wheels, chains, and other connecting mechanism. As these conveyers have been hitherto constructed the different sections were arranged to overlap each other at the ends, and this construction necessitated a separate feed chain or belt for each section, and each section had to be connected with its adjacent sections by driving mechanism, so as to transmit the power from the belt or chain of one section to its adjacent section. By my improvement the sections are arranged end to end and a drag-chain is employed that can be readily shortened or lengthened, as may be necessary, to accommodate it to the different total lengths of the feeder.

The second feature of my invention relates to the construction of the universal-joint mechanism by which the drag-feeder can be set at any desired angle to the regular feeder.

My invention further relates to certain details of construction, all of which will be fully described, and pointed out in the claims hereunto annexed.

Referring to the drawings, in which the same reference characters are used to designate identical parts in all the views, Figure 1 is a side elevation of one end of a corn-sheller having the regular feeder attached thereto and the drag-feeder in its shortest form—i. e., without any removable sections attached thereto. Fig. 2 is a side elevation of the drag-feeder attached as shown in Fig. 1, but with an additional section added. Fig. 3 is a fragmentary side elevation showing the

connections between the regular feeder and the drag-feeder on the opposite side of the machine from those shown in Fig. 1. Fig. 4 is a section through the swiveling mechanism, on an enlarged scale, on the line 4 4 of Fig. 1. Fig. 5 is a side elevation of the same mechanism. Fig. 6 is a plan view thereof. Fig. 6^a is a detail in side elevation of a portion of the bearing. Fig. 7 is a plan view of the swiveling mechanism on the line 7 7 of Fig. 5. Fig. 7^a is a detail in section on the line 7^a 7^a of Fig. 7. Fig. 8 is a side elevation of the upper end of one of the posts supporting the swiveling mechanism. Fig. 9 is a side elevation, on an enlarged scale, of the drag-feeder in central vertical section. Fig. 10 is a plan view of a portion thereof on the same scale. Fig. 11 is a plan view in section on the line 11 11 of Fig. 9. Fig. 12 is a detail view in section on the line 12 12 of Fig. 9. Fig. 13 is a similar view in section on the line 13 13 of Fig. 9, and Fig. 14 is a plan view of a casting employed to control the position of the drag-chain.

Referring to Fig. 1, A is the separator, and B is the regular feeder, which in itself may be of any ordinary construction, it being adapted to receive the corn from the drag-feeder C into its hopper D, whence it is conveyed by the drag chain or belt E and delivered to the hopper F of the sheller. I have not shown the details of the construction of this regular feeder B, as such features therein as are novel are the same as shown in the drag-feeder C and will be fully described in connection therewith, and claims upon the novel mechanism are designed to cover said mechanism whether employed in the regular or drag feeder.

Referring now to the universal swiveling connections between the regular and drag feeder, G are the posts which support the lower end of the regular feeder, and the upper end of these posts have the semicircular outline adapted to receive the cylindrical body portion of the bearings H, which have slotted flanges J projecting downwardly from the outer ends thereof, these bearings being secured to the posts G by the bolts K, passing through said posts and the slots in the flanges J. Journaled in these bearings H is the horizontal shaft L, which has the sprocket-

wheel M splined or otherwise secured on one end thereof, this sprocket-wheel having the sprocket-chain N thereon, by which it receives power from the sprocket-wheel O, secured upon a horizontal shaft in the lower end of the regular feeder, which horizontal shaft is driven by the drag belt or chain E, which in turn receives its power by the customary gearing and sprocket connections, as shown in Figs. 1 and 3. A little at one side of the center of the shaft L is secured the beveled pinion P, which meshes with the beveled pinion Q, which is secured to the lower end of the vertical shaft R. This shaft R has its lower end journaled in the bearing S, formed in the sleeve T, which sleeve, as will be seen in Fig. 4, 7, and 7^a, has the horizontal flanges U, to which the vertical bearing V, which has the cooperating flanges W, is secured by the bolts X. This bearing V has the cylindrical portion which constitutes the bearing proper, together with the curved arm Y, which terminates in the flanges W. There is also secured to this bearing V the curved shield Z, (best shown in Figs. 4, 7, and 7^a,) which shield covers the beveled gears P and Q on the side next to the drag-conveyer, so as to prevent any of the corn or other material delivered therefrom getting into the gearing mechanism and disarranging it. A small lug A' on one side of this bearing V has the aperture B' therein, through which passes the rod C', which is secured in place by the set-screw D'. The other end of this rod C' is formed with a hook E', as indicated by dotted lines in Fig. 1, which cooperates with the pin or hook on the regular feeder, so as to hold the swiveling mechanism in a vertical position or other position that may be necessitated by the position of the parts and contour of the ground. Just above the bearing V of the shaft R is secured the beveled pinion F', which meshes with the corresponding pinion G', which is secured upon the horizontal shaft H', which is journaled in the bearings to be described. These bearings consist of the two pieces J' and K'. The piece J' consists of a collar L', having extending therefrom the half-sleeve M', provided with the flanges N', by which the piece J' is bolted to the flanges O' on the member K'. The shaft H' is supported in the bearings formed by the half-sleeve M' and the corresponding half-sleeve P' on the member K', also by the bearing Q', formed in the member K'. These members J' and K' have attached thereto the bars R', the lower ends of which are adjustably secured to the sides of the drag-feeder C by bolts passing through the elongated slot S'. The upper ends of these bars R' have circular apertures therein, the shaft H' passing through the aperture in one of these bars, while the heavy set-screw T' passes through the other and into the arm U' of the member K'. The central portion of the member K' is provided with the vertical bearing V', occupied by the upper end of the shaft R, which has its ex-

treme upper end turned down, so as to form a shoulder W', upon which the member K' rests, the bearing being correspondingly reduced so as to form a small aperture, through which the small upper end X' of the shaft R passes. To protect the beveled gears F' and G' from the corn or other materials which are being fed, the connecting-web Y' is shaped so as to cover a part of the gears, while the shield Z', corresponding in shape and function to the shield Z, is also secured or formed thereon. The outer end of the shaft H' has the sprocket-wheel A² secured thereon, and this sprocket-wheel has thereon the chain B², which drives the sprocket-wheel C², which by the mechanism to be described actuates the belt of the drag-conveyer.

The drag-conveyer C consists, essentially, of the inclined end D², cooperating with the feeder proper and the lower horizontal end E², and as many sections F² may be interposed between these ends as may be necessary to cover the length of the crib from which the corn is to be drawn. The end section D² consists of the vertical sides F², which are connected by the inclined bottom piece G² (shown in Fig. 9) and which may be provided with the inclined side boards H² of the customary construction. Journaled in the bearings J², secured upon the upper ends of these side boards F², is the horizontal shaft K², which carries the sprocket-wheel C² upon its outer end and which has secured thereon just inside of the side boards F² the sprocket-wheels L², which transmit the power to the drag chain or conveyer. This conveyer consists of the two chains cooperating with the two wheels and made up of the ordinary detachable links M² and the special links N², which special links are formed with the vertical flanges O², projecting from one side thereof and arranged to have the carrier bars or slats P², which are preferably metallic strips, secured thereto. As will be seen from Figs. 12 and 13, I secure on the upper side of the bottom G² at either side the metallic strips Q², upon which the links of the chain slide. The bars P² have their lower edges projecting down below the strips Q² close to the bottom, so as to prevent any material getting underneath the chain and clogging it. The end section E² is similarly constructed, consisting of the side pieces F², the side boards H², which may be removable, if desired, and the bottom G², which is also provided with the strips Q². The extreme outer end is formed with the end consisting of the vertical portion R² and the inclined portion S², the inclined portion S² connected with the bottom G² and serving to form protection for the sprocket-wheels T² from the corn which is thrown into the section. These sprocket-wheels T² are secured upon the ends of the shaft U² just inside of the sides F² and carry the drag-chains previously mentioned. The set-screws V² may be employed in connection with any desired form of adjustable mechan-

ism W^2 to regulate the position of the shaft U^2 and the tightness of the belt. The adjacent ends of the sections D^2 and E^2 are provided with the straps X^2 and Y^2 on either side, having the bearings therein for the rod Z^2 , by which the sections may be readily coupled or uncoupled, as desired. As shown in Figs. 1 and 9, the side pieces F^2 are cut away at an inclination from the vertical both above and below the bearing-rod Z^2 , and the bottom pieces G^2 of the two sections have their ends concaved, so as to fit closely against this rod, this construction preventing any opening between the bottom pieces, no matter at what angle they may be to each other owing to the unevenness of the ground, and permitting any necessary adjustment between the sections. To hold the drag-chains down and prevent any possible raising thereof, so as to permit the corn to get underneath the conveyer, I secure on the inner sides at the lower end of the section D^2 the castings A^3 , which consist of the vertical flange B^3 , by which they are bolted to the sides and the horizontal flanges C^3 , which coöperate with the upper sides of the links of the chain to hold them down. The flange C^3 is preferably curved at its lower end, as at D^3 , so as to more readily accommodate the change in direction of the chain. To prevent the sagging of the chain on the section D^2 , I secure on the outer sides of said section, at the upper end thereof, the castings E^3 , (shown in Figs. 1 to 3 and 9 and 11,) which consist of the vertical flanges E^{31} , by which they are bolted to the sides and are of the general shape shown in the drawings. The horizontal flange F^3 projects inwardly beneath the bottom of the side pieces and into the path of the chain, which is arranged to be sustained thereby, as shown in Figs. 9 and 11, to prevent the unnecessary sag and also to insure a better engagement between the chain and the sprocket-wheels L^2 . This flange F^3 may be curved downward slightly, as shown at G^3 . The piece G^2 , constituting the bottom of the section D^2 , has its upper end G^{31} , preferably formed of sheet metal, fastened to the wooden bottom G^2 and curved over the shaft K^2 , so as to carry the corn entirely over and beyond said shaft before it is allowed to fall into the hopper D . The sections E^2 and D^2 are shown as supported by the posts H^3 and J^3 , respectively, although it will be obvious that the sides might be continued down to furnish the support.

The construction of the drag-feeder thus described may be employed where only a small length of crib is tapped; but in case a considerable length is to be reached at one setting of the machine I may employ in addition thereto one or more sections F^{21} , as shown in Fig. 2. These sections F^{21} are built similarly to the sections E^2 and H^2 , consisting of the sides, side boards, and bottom, and supported by the legs K^3 . They are provided with straps L^3 and M^3 , adapted to coöperate with the straps X^2 and Y^2 , respectively, as

shown in Fig. 2. To prevent the drag-chain from sagging when the sections are in use, one or more castings N^3 (shown in detail in Fig. 14) may be employed. These castings have the vertical flange O^3 , by which they are secured to the outer sides of the pieces F^2 , and the horizontal flanges P^3 , projecting beneath said side pieces and into the path of the chain, with which they coöperate in the same manner as the flanges F^3 of the castings E^3 . It will be readily perceived that when the drag-feeder is to be lengthened or shortened all that is necessary is to connect up the straps L^3 and M^3 of as many sections as may be desired with the straps X^2 and Y^2 and to insert or take out as much chain as may be necessary, which can be readily done, owing to the use of the detachable link construction employed. The parts can be readily adjusted in any desired manner and easily assembled and disassembled for transportation.

While I have shown my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of some 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.

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

1. In a device of the class described, the combination of the two sections adjustable relative to each other to vary the horizontal angle between them, a shaft journaled in each end of each of said sections, a drag chain or belt in each section coöperating with said shafts, with universal-joint connections between said shafts of the adjacent ends of said sections for transmitting the power from one of said shafts to the other in any position of adjustment between said sections.

2. In a device of the class described, the combination of the two sections adjustable relative to each other to vary the horizontal angle between them, a shaft journaled in each end of each of said sections, a drag chain or belt in each section coöperating with said shafts, with universal-joint connections between said shafts in the adjacent ends of said sections for transmitting the power from one of said shafts to the other in any position of adjustment between said sections, said connections comprising intermediate shafts to which said shafts in the adjacent ends of the sections are geared, and a cross-shaft geared to said intermediate shafts.

3. In a device of the class described, the combination of the two sections adjustable relative to each other to vary the horizontal angle between them, a shaft journaled in each end of each of said sections, a drag chain or belt in each section coöperating with said shafts; with universal-joint connections between said shafts in the adjacent ends of said sections for transmitting the power from one

of said shafts to the other in any position of adjustment between said sections, said connections comprising intermediate shafts to which said shafts in the adjacent ends of the sections are geared, and a cross-shaft geared to said intermediate shafts; and a support for the lower end of the receiving-section arranged beneath said end, the universal-joint connections being carried by said support, and the upper end of the discharging-section resting on the top of said universal-joint connections.

4. In a device of the class described, the combination of the two sections adjustable relative to each other to vary the horizontal angle between them, a shaft journaled in each end of each section, an endless drag chain or belt in each section cooperating with the shafts therein, with universal-joint connections between the shafts in the adjacent ends for transmitting the power from one of said shafts to the other in any position of adjustment between said sections, said connections comprising a bevel-gear on each of two intermediate shafts geared to the shafts in the adjacent ends of the sections, a cross-shaft carrying bevel-gears meshing with the bevel-gears on said intermediate shafts, and a suitable support for said cross-shaft consisting of a sleeve surrounding the lower intermediate shaft and having an arm Y supporting the vertical bearing V for said cross-shaft, substantially as and for the purpose described.

5. In a device of the class described, the combination of the two sections adjustable relative to each other to vary the horizontal angle between them, a shaft journaled in each end of each of said sections, a drag chain or belt in each section cooperating with the shafts therein, a support for the lower end of the receiving-section, and universal swiveling connections resting on said support for connecting the shafts in the adjacent ends of the sections, the upper end of the discharging-section resting on said universal swiveling connections, substantially as and for the purpose described.

6. In a device of the class described, the combination of the two sections adjustable relative to each other to vary the horizontal angle between them, a shaft journaled in each end of each of said sections, a drag chain or belt in each section cooperating with the shafts therein, a support for the lower end of the receiving-section, and universal swiveling connections carried by said support for connecting the shafts in the adjacent ends of the sections, said swiveling connections consisting of a frame in which are journaled the two intermediate shafts geared to the shafts in the adjacent ends of the sections and each carrying a bevel-gear, and a cross-shaft also mounted in said frame carrying bevel-gears meshing with the bevel-gears on said intermediate shafts, substantially as and for the purpose described.

7. The combination of the sections B and

C adjustable relative to each other to vary the angle between them, and having the shafts L and H' respectively journaled therein, with universal-joint connections for transmitting power from the shaft L to the shaft H', said connections comprising the bevel-gears P and G' secured thereon respectively, the intermediate shaft R having the bevel-pinions Q and F' thereon meshing with the bevel-pinions P and G' respectively, and a suitable support for the shaft R consisting of the sleeve T surrounding the shaft L and having the arm Y supporting the vertical bearing V for said intermediate shaft and the shield Z covering the bevel-gears P and Q.

8. In a device of the class described, the combination of the bearings H, the shaft L journaled therein and having the bevel-gear P secured thereto, the sleeve T surrounding said shaft and having the bearing S therein, the arm Y secured to said sleeve T and having the vertical bearing V supported thereby, the shaft R mounted in said bearings S and V and having the bevel-gear Q meshing with the bevel-gear P and the bevel-gear F' secured near the upper end thereof, the shaft H' having the bearing consisting of the member J' secured to the member K', the member K' having a bearing therein for the shaft R which supports it, and the bevel-gear G' upon the shaft H' meshing with the bevel-gear F', substantially as and for the purpose described.

9. In a device of the class described, the combination of the bearings H, the shaft L journaled therein and having the bevel-gear P secured thereto, the sleeve T surrounding said shaft and having the bearing S therein, the arm Y secured to said sleeve T and having the vertical bearing V supported thereby and the shield Z, the shaft R mounted in said bearings S and V and having the bevel-gear Q meshing with the bevel-gear P and the bevel-gear F' secured near the upper end thereof, the shaft H' having the bearing consisting of the member J' secured to the member K', the member K' having a bearing therein for the shaft R which supports it and carrying the shield Z', and the bevel-gear G' upon the shaft H' meshing with the bevel-gear F', substantially as and for the purpose described.

10. In a device of the class described, the combination with an end section, a conveying-shaft journaled in its outer end, of another end section, a conveying-shaft journaled in its outer end, said sections being adapted to be joined directly to each other at their inner ends, a removable intermediate section adapted to be interposed between said end sections and joined directly to their inner ends, a single adjustable endless drag chain or belt cooperating with said shafts and with the bottoms of said sections, and connections for joining the ends of said sections in the manner described, said connections being adapted to yield vertically to automatically adjust the

sections to uneven ground upon which they may be placed.

11. In a device of the class described, the combination with an inclined end section, a conveying-shaft journaled in the upper end thereof, of a substantially-horizontal end section, a conveying-shaft journaled in the outer end thereof, said sections being adapted to be joined directly together at their inner ends, a removable intermediate section adapted to be interposed between said end sections and joined directly thereto at their inner ends, a single adjustable endless drag chain or belt cooperating with said shafts and with the bottoms of said sections, a guide located on the lower end of said inclined section and adapted to hold the drag-chain adjacent to the bottom of the sections throughout their length, and connections for joining the ends of said sections in the manner described, said connections being adapted to yield to automatically adjust the sections to uneven ground upon which they may be placed, substantially as and for the purpose described.

12. In a device of the class described, a trough comprising the end sections consisting of the sides and the bottom pieces secured between the top and bottom of said sides, said sections being adapted to be joined directly together at their inner ends, the conveying-shafts journaled in the outer ends of said sections, the removable intermediate section similarly constructed, but without any shafts and adapted to be inserted between said end sections, the cooperating ends of

said sections being jointed in the plane of the bottom pieces and having their sides cut away at an angle above and below said bottom pieces to permit changes in the angles between said sections to accommodate them to irregular ground without opening the bottoms thereof, and an endless drag chain or belt cooperating with said conveying-shafts, substantially as and for the purpose described.

13. In a device of the class described, the trough comprising the end sections each consisting of the sides and the bottom piece secured between the top and bottom of said sides, said sections being adapted to be joined directly together at their inner ends, the conveying-shafts journaled in the outer ends of said sections, the removable intermediate section constructed similarly to the end sections, but without the conveying-shafts, and adapted to be inserted between them, the cooperating ends of said sections being joined by a pivot-rod passing therethrough at the plane of the bottom pieces, and having their sides cut away at each end at an angle above and below said rod so as to permit the changes in the angles between said sections to accommodate them to irregular ground without separating the bottom pieces, and an endless drag chain or belt cooperating with said shafts.

JOHN QUINCY ADAMS.

Witnesses:

LOUISE E. SERAGE,
HATTIE O. HALVORSON.