

No. 659,722.

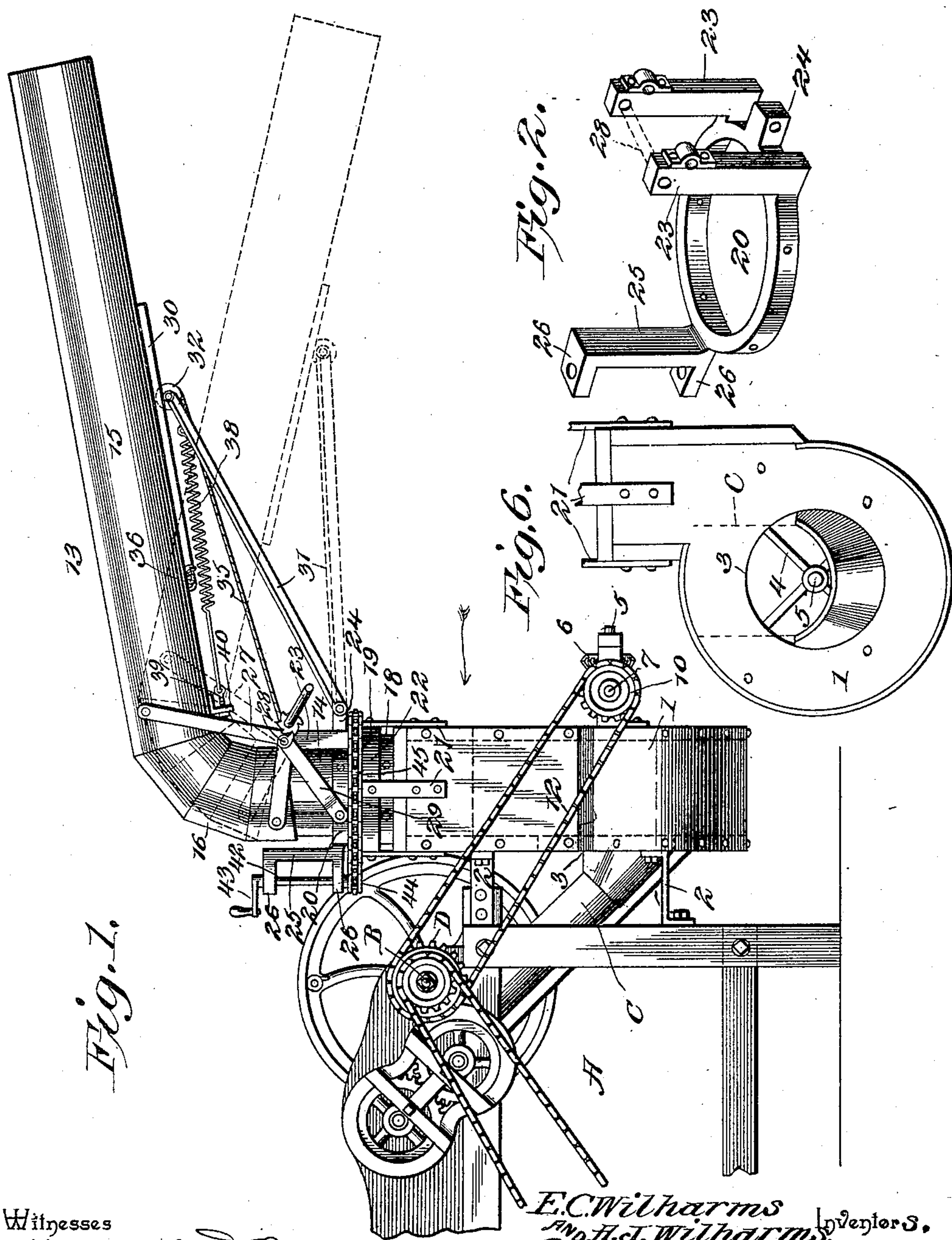
Patented Oct. 16, 1900.

E. C. & A. J. WILHARMS.  
PNEUMATIC FEED CONVEYER FOR FEED CUTTERS.

(Application filed July 9, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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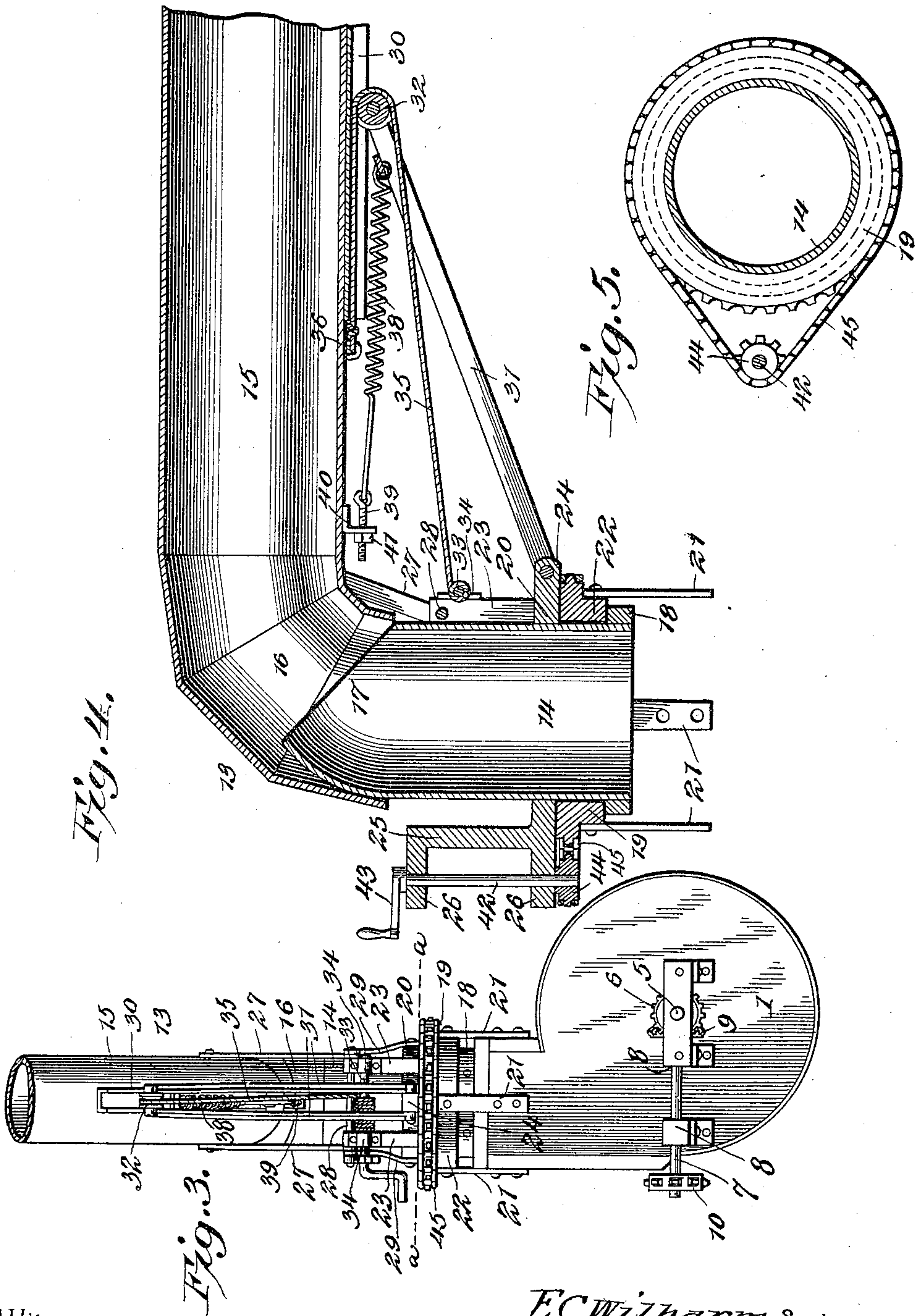
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# UNITED STATES PATENT OFFICE.

EDWIN C. WILHARMS AND ADOLPH J. WILHARMS, OF GREENLEAF,  
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## PNEUMATIC FEED-CONVEYER FOR FEED-CUTTERS.

SPECIFICATION forming part of Letters Patent No. 659,722, dated October 16, 1900.

Application filed July 9, 1900. Serial No. 23,023. (No model.)

*To all whom it may concern:*

Be it known that we, EDWIN C. WILHARMS and ADOLPH J. WILHARMS, citizens of the United States, residing at Greenleaf, in the county of Brown and State of Wisconsin, have invented a new and useful Pneumatic Feed-Conveyer for Feed-Cutters, of which the following is a specification.

Our invention is an improved pneumatic feed-conveyer for feed-cutters, its object being to provide means for pneumatically conveying the feed, as the same is discharged from the feed-cutter, to a bin or other point, thereby avoiding the necessity of handling the cut feed.

Our invention consists in the peculiar construction and combination of devices herein-after fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a pneumatic feed-conveyer embodying our improvements combined with a feed-cutter. Fig. 2 is a detail perspective view of the turning-ring. Fig. 3 is an elevation of the pneumatic feed-conveyer looking in the direction of the arrow in Fig. 1. Fig. 4 is a detail sectional view of the pneumatic conveying-tube and its operative connections. Fig. 5 is a detail sectional view on the line *a a* of Fig. 3, showing the sprocket-ring, the sprocket-pinion, and the endless sprocket-chain connecting said ring and pinion. Fig. 6 is a detail elevation of the inner side of the fan-casing.

The feed-cutter (indicated at A in Fig. 1) may be of any suitable construction, and it has a power-shaft B and a delivery spout or trough C, through which the cut feed descends as it is discharged from the feed-cutter. On the discharge end of the feed-cutter is secured the fan-casing 1, the same being secured thereto, in the form of our invention herein shown, by means of brackets 2, which are bolted to the inner side of the fan-casing and to the outer side of the frame of the feed-cutter. Said fan-casing is lined with tin. The spout or trough C of the feed-cutter discharges into the air-intake opening 3 of the fan-casing, so that the cut feed as it is discharged from the feed-cutter is conveyed di-

rectly to the interior of the fan-casing. A rotary blower-fan 4 is located in the fan-casing and is mounted on a shaft 5, which has its bearings on opposite sides of the fan-casing, and said shaft is provided near its outer end with a miter gear-wheel 6. A shaft 7, which is mounted in suitable bearings 8 on the outer side of the fan-casing, has a miter gear-wheel 9, which engages the gear-wheel 6, and the said shaft is provided at its outer end with a sprocket-wheel 10, which is connected to a sprocket-wheel D on the shaft B of the feed-cutter by an endless sprocket-chain 12. It will be understood from the foregoing that power is thus conveyed from the shaft B to the blower-fan and that the latter is rotated when the feed-cutter is in operation. On the upper side of the fan-casing is located a pneumatic conveying-tube, which we will now describe.

The pneumatic conveying-tube 13 comprises a vertical inner or base section 14 and an adjustable outer section 15, the inner end of which is curved to form an elbow 16, that acts with the curved upper portion 17 of base-section 14 to form a joint with said section 14 and admit of the swinging of the section 15 in a vertical plane. On the lower end of the section 14 is a base-ring 18. The section 14 turns in a sprocket-ring 19, and fast with the section 14 is a turning-ring 20, which bears on the sprocket-ring, the latter bearing on the base-ring. The lower end of the section 14 coincides with an opening in the top of the fan-casing, and the sprocket-ring is secured above the upper side of the fan-casing by means of supporting-bars 21, which are bolted to the fan-casing and to the depending flange 22 of the sprocket-ring, as shown. It will be understood from the foregoing that the sprocket-ring is secured against rotation and forms the support for the pneumatic conveying-tube and that the lower section of the pneumatic conveying-tube is swiveled to the said sprocket-ring.

The turning-ring 20 is provided on one side, which we will call the "outer" side, with a pair of vertical standards 23 and with a stud or ear 24, which is located between the bases of said standards 23. On the opposite side of



the turning-ring is a vertical standard 25, having a pair of horizontally-disposed bearing-lugs 26 at the upper and lower ends thereof. A pair of brace-bars 27 are secured to the curved or elbowed inner end of the tube-section 15 and pivotally mounted on a bolt-rod 28, supported by the standards 23. Link-bars 29 connect said bolt-rod to the turning-ring 20. Hence the upper and lower sections of the pneumatic conveying-tube are adapted to swing in unison in a horizontal plane.

The upper section 15 of the pneumatic conveying-tube is provided on its lower side with a guideway 30. A supporting-arm 31 is pivotally connected at its inner lower end to the stud or ear 24 of the turning-ring 20 and is provided at its outer end with a trolley sheave or pulley 32, which travels in the guideway 30. A winch 33 is journaled in bearings 34 on the outer sides of standards 23. A rope 35 has one end attached to the said winch and is adapted to be wound thereon and payed off therefrom, the said rope passing around the trolley-sheave 32 and its upper end being attached to the lower side of the section 15 of the pneumatic conveying-tube, as at 36. It will be understood from the foregoing that by turning the winch so as to pay off or reel in the rope 35 the section 15 of the pneumatic conveying-tube may be raised and lowered. The arm 31, coacting with the rope 35 and trolley-sheave 32, supports the outer portion of section 15 of the pneumatic conveying-tube. In order to relieve the rope 35 of excessive tension, and hence facilitate the raising and lowering of the section 15 of the pneumatic conveying-tube, we provide a supporting-spring 38, the outer end of which is connected to the supporting-arm 31, near the outer end of the latter, and the inner end of which is attached to an adjusting-bolt 39, which is connected to the pneumatic conveying-tube section 15, near the inner end of the latter, by a bracket 40, which depends from said tube-section and an adjusting-nut 41. The latter by permitting of the adjustment of the bolt 39 enables the tension of the spring 38 to be increased or diminished, as may be found desirable.

A shaft 42, which is vertically disposed, is journaled in the bearings 26, with which the standard 25 of turning-ring 20 is provided. Said shaft has at its upper end a hand-crank 43, whereby it may be readily rotated in either direction and is provided at its lower end with a sprocket-pinion 44, which is connected to the sprocket-ring 19 by an endless sprocket-chain 45. It will be understood that by turning the shaft 42 power may be conveyed therefrom to the sprocket-ring 19, and hence that the pneumatic conveying-tube may be swung laterally in either direction to direct the cut feed, which is discharged pneumatically

through said conveying-tube in any direction that may be desired.

Our improved pneumatic feed-conveyer in combination with a feed-cutter is particularly useful in barns, feed-stores, and the like for conveying the feed as the same is cut directly from the feed-cutter to the receiving-bin, thus saving the handling of the cut feed. Our invention is also extremely useful in stables where numbers of animals are fed and cared for.

Having thus described our invention, we claim—

1. In a pneumatic tube of the class described, the combination of the upper and lower sections flexibly connected together and adapted to be turned laterally in unison, a supporting-arm connected to one section and having a trolley-sheave operating in a guideway with which the other section is provided, a winch connected to one section and a rope connecting the said winch with the other section, said rope operating on said trolley-sheave, substantially as described.

2. In a pneumatic tube of the class described, the combination of the lower section, a suitable support therefor, said lower section being revoluble on said support, the upper section flexibly connected at its inner end to the upper end of the lower section, a supporting-arm pivotally connected to the lower section and having a trolley-sheave at its upper end, a guideway on the upper section in which said trolley-sheave operates, a cord or rope attached to the upper section and passed over said trolley-sheave, and a supporting-spring connecting said supporting-arm to said upper section, substantially as described.

3. The combination of the lower pneumatic conveying-tube section, the supporting sprocket-ring in which the same turns, the turning-ring secured to said lower section and bearing on said sprocket-ring, a shaft carried by said turning-ring and having a sprocket-pinion, an endless sprocket-chain connecting said sprocket pinion and ring, the upper pneumatic-tube section flexibly connected to the lower tube-section, the supporting-arm pivotally connected to the turning-ring and carrying a trolley-sheave which operates under the upper tube-section, a rope attached to said upper tube-section and passing over said trolley-sheave, and means to operate said rope, for the purpose set forth, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

EDWIN C. WILHARMS.  
ADOLPH J. WILHARMS.

Witnesses:

H. G. MEYER,  
E. H. SAEMANN.