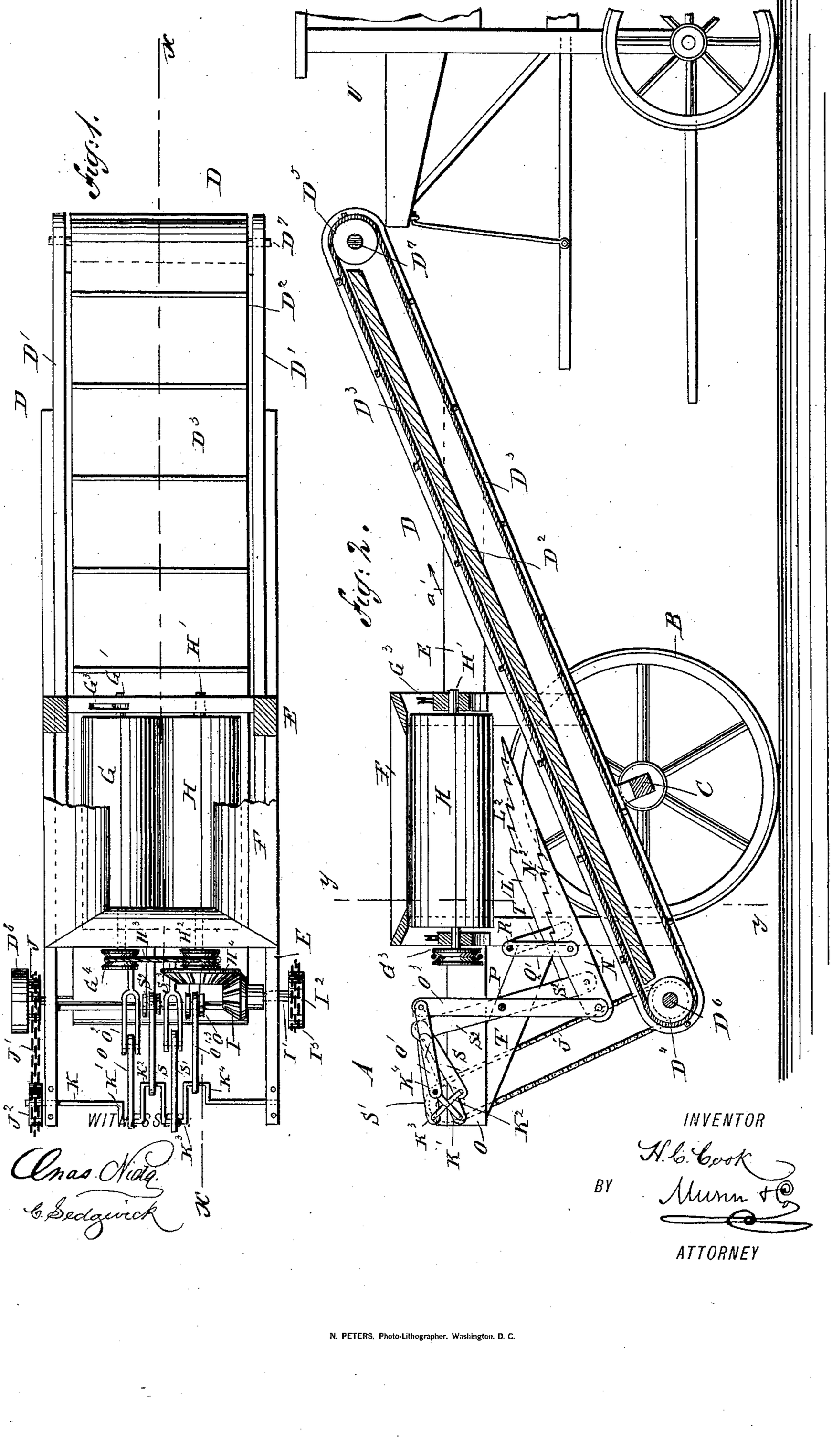
(No Model.) 2 Sheets—Sheet 1.

H. C. COOK.

BAND CUTTER AND FEEDER.

No. 410,785. Patented Sept. 10. 1889.



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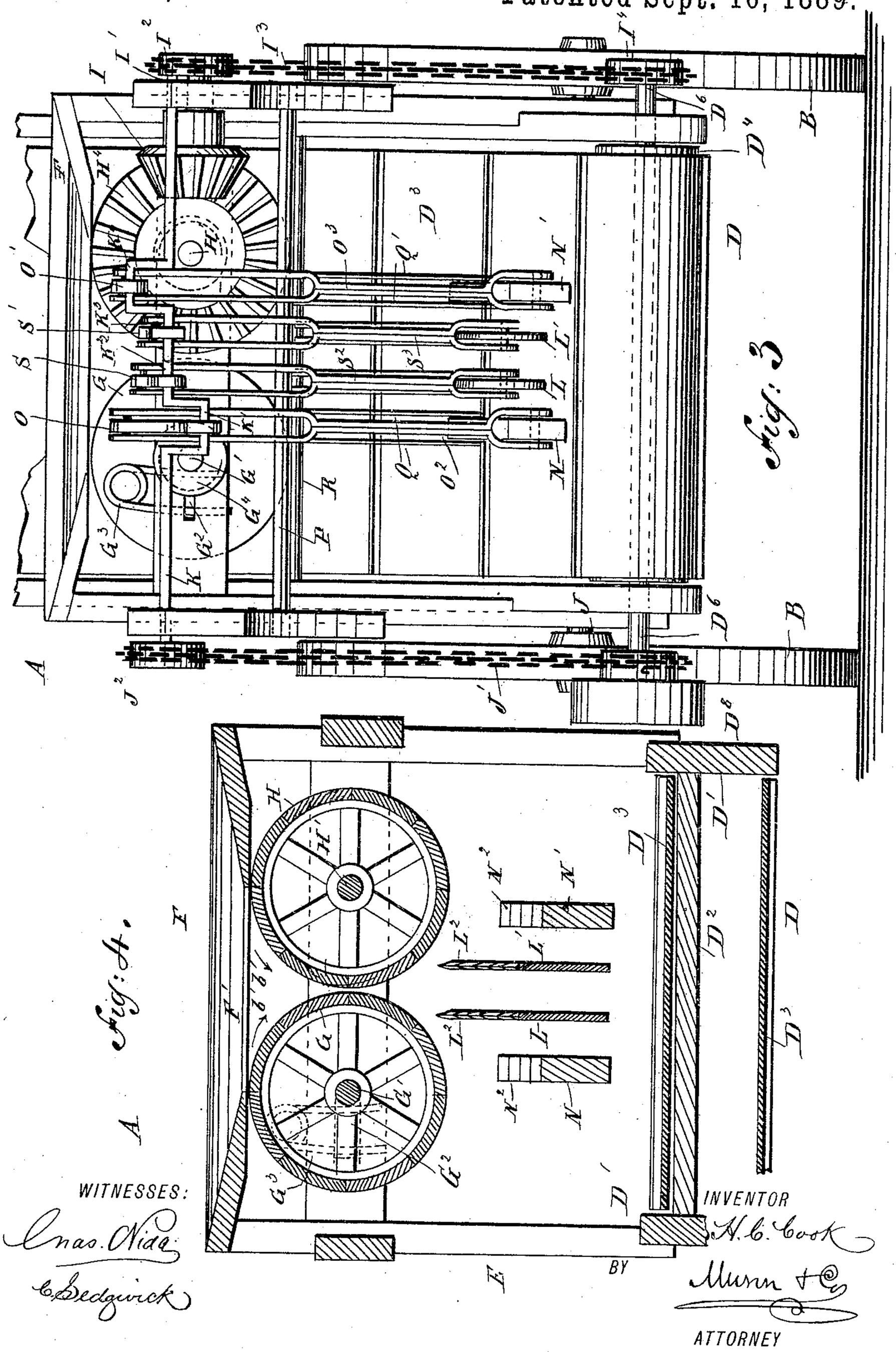

Fig. 3.

Fig. 4.

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BAND-CUTTER AND FEEDER.

SPECIFICATION forming part of Letters Patent No. 410,785, dated September 10, 1889.

Application filed January 23, 1889. Serial No. 297,290. (No model.)

To all whom it may concern:

Be it known that I, HENRY CARL COOK, of Mount Joy, in the county of Scott and State of Iowa, have invented a new and Improved Band-Cutter and Feeder, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved attachment for thrashing-machines, for cutting the bands of the sheaves of grain and delivering the grain to the feeding-drum of the thrashing-machine.

The invention consists of two rollers between which the sheaves are passed and held while the swinging knives cut the bands, two shakers held alongside the knives to loosen the grain after the band is cut, and an elevator for carrying the loose grain to the drum of the thrashing-machine.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement with parts broken out. Fig. 2 is a sectional side elevation of the same on the line *x x* of Fig 1. Fig. 3 is an enlarged end elevation of the improvement, and Fig. 4 is an enlarged transverse section of the same on the line *y y* of Fig. 2.

The improved band-cutter and feeder A is mounted on wheels B, turning on an axle C, fastened to the side beams D′ of an elevator D, provided with the usual table D^2, connecting the side beams D′ with each other. Over the top of the table D^2 travels the usual endless belt D^3, passing over the pulleys D^4 and D^5, secured on the shafts D^6 and D^7, respectively, mounted to turn in suitable bearings in the ends of the side beams D′. On the outer end of the shaft D^6 is secured a pulley D^8, over which passes a belt driven from a suitable pulley on the thrashing-machine on which the band-cutter and feeder is used. On the side beams D′ of the elevator is erected a suitable frame E, supporting on its top a hopper F, provided with the usual central opening F′, leading between two rollers G and H, placed alongside of each other and extending longitudinally in line with the elevator D. The rollers G and H are secured on the shafts G′ and H′, respectively, of which the latter is mounted to rotate in suitable fixed bearings on the frame E, while the shaft G′ is mounted to turn in transverse slots G^2, formed in the frame E. Against the ends of the shaft G′ press the springs G^3, held on the frame E and serving to make the roller G yielding, according to the size of the sheaf fed between the rollers G and H from the hopper F. On one end of the shaft G′ is secured a grooved pulley G^4, and a similar pulley H^2 is fastened on one end of the shaft H′. A belt H^3 passes over the pulleys H^2 and G^4, so that the two rollers G and H are rotated together. Next to the pulley H^2 on the shaft H′ is secured on the latter a bevel gear-wheel H^4, meshing into a bevel-pinion I, fastened on one end of a shaft I′, extending transversely and mounted to turn in suitable bearings in the frame E. On the outer end of the shaft I′ is secured a sprocket-wheel I^2, over which passes a sprocket-chain I^3, also passing over a sprocket-wheel I^4, secured on the outer end of the shaft D^6, carrying the elevator-roller D^4. On the opposite end of the shaft D^6, alongside the pulley D^8, is secured a sprocket-wheel J, over which passes a sprocket-chain J′, extending upward and forward to pass over a sprocket-wheel J^2, secured on a shaft K, extending transversely and mounted to turn in suitable bearings in the frame A. On the shaft K are formed the crank-arms K′, K^2, K^3, and K^4, of which the crank-arms K′ and K^4 stand diametrically opposite each other, and the crank-arms K^2 and K^3 also stand diametrically opposite each other and at the same time at right angles to the crank-arms K′ and K^4. The crank-arms K^2 and K^3 are adapted to operate the knives L and L′, mounted to swing directly under the rollers G and H, and serving to cut the band of the sheaf held between the said rollers G and H, as hereinafter more fully described. The crank-arms K′ and K^4 serve to impart a swinging motion to the shakers N and N′, located alongside the knives L and L′, and serving to spread the grain after the band is cut.

The intermediate mechanism between the crank-arms and the knives L and L′ and the shakers N and N′ is constructed as follows: The crank-arms K′ and K^4 are pivotally connected by the links O and O′, respectively, with the levers O^2 and O^3, respectively, fulcrumed on a transversely-extending rod P,

secured to the frame E. The lower ends of the levers O^2 and O^3 are pivotally connected with the outer ends of the shakers N and N′, hung on links Q and Q′, fulcrumed on the transversely-extending rod R, secured to the frame E. Each of the shakers N and N′ consists of a bar tapered at its inner end and provided on this end, on top, with notches N^2, as is plainly shown in Fig. 2. The crank-arms K^2 and K^3 are pivotally, connected by the links S and S′ with the levers S^2 and S^3, also fulcrumed on the rod P, and pivotally connected at their lower ends with the outer ends of the knives L and L′, hung on the links T and T′, fulcrumed on the rod R, also supporting the links Q and Q′, before mentioned. Each of the knives L and L′ consists of a steel plate, pointed near its inner end, and provided with knife-edge teeth L^2, which serve to cut the band of the sheaf.

The operation is as follows: When the band-cutter and feeder is to be used on a thrashing-machine U, it is placed in the position shown in Fig. 2—that is, the elevator D is inclined so that the roller D^5 is located above the feed-board of the thrashing-machine, and the grain passing onto the belt D^3 is discharged at the upper end of the elevator onto the feed-board of the thrashing-machine and passes to the drum. The pulley D^8 is connected by a belt with the pulley on the thrashing-machine, so that when the latter is set in motion the shaft D^6 is rotated and the belt D^3 is set in motion in the direction of the arrow a'. The rotary motion of the shaft D^6 imparts a rotary motion, by means of the sprocket-chain I^3 and the sprocket-wheels I^4 and I^2, to the shaft I′, and the latter, by its bevel-pinion I, rotates the bevel gear-wheel II^4, so that the shaft II^2, carrying the roller II, is also rotated. The rotary motion of the shaft II′ is transmitted by the endless belt II^3 and the pulley G^4 to the shaft G′, so that the roller G turns simultaneously with the roller II in the direction of the arrows b', as is plainly shown in Fig. 4. The rotary motion of the elevator-shaft D^6 also imparts, by means of the sprocket-chain J′ and the sprocket-wheels J and J^2, a rotary motion to the crank-shaft K, which latter, by the links O O′ and S S′, imparts a swinging motion to the levers O^2 O^3 and S^2 S^3, whereby the shakers N and N′ and the knives L and L′ are alternately moved forward and backward directly under the rollers G and H. When the operator now places the sheaf into the opening F′ of the hopper F, it is drawn downward by the rollers G and H, of which the roller G yields to whatever thickness the sheaf may have. When the sheaf has passed about half-way between the rollers G and H, either of the knives L or L′, in its forward motion, will cut with its cutting-edge L^2 the band of the sheaf while the latter is firmly held between the rollers G and H. After the band is cut the grain spreads to the sides, and is operated on by the shakers N and N′, which, by their teeth N^2, move the grain forward, being assisted by the teeth L^2 of the knives L and L′. The grain then passes in a loose and spread condition onto the elevator B^3, which carries the loose grain upward and discharges it onto the feed-board of the thrashing-machine U. The feed-board is usually inclined, so that the grain passes directly to the drum of the thrashing-machine, and is treated further in the usual manner.

It is understood that after the band is cut the balance of the sheaf passes between the rollers G and H, and the loose grain passing between the rollers is constantly moved forward onto the belt D^3 by the shakers N N′ and the knives L′ L. Thus it will be seen that the sheaf is fed automatically to the knives, and the latter cut the band, after which the grain is spread on the elevator-belt, which latter feeds it directly to the drum of the machine.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a band-cutter and feeder, the combination, with feed-rollers, of shakers suspended under the rollers, knives suspended between the shakers, and means for alternately swinging the shakers and knives backward and forward, substantially as herein shown and described.

2. In a band-cutter and feeder, the combination, with feed-rollers, of tapered shakers having their upper faces notched suspended under the rollers, knives having knife-edged teeth suspended between the shakers, and means for alternately moving the shakers and knives backward and forward, substantially as described.

3. In a band-cutter and feeder, the combination, with a supporting-frame and feed-rollers mounted therein, of a crank-shaft journaled in the frame at right angles to the feed-rollers, shakers suspended under the feed-rollers, knives also suspended under the said rollers between the shakers, pivoted levers having their lower ends connected to the shakers and knives, and links connecting the upper ends of the levers with the cranks of the said shaft, substantially as herein shown and described.

4. In a band-cutter and feeder, the combination, with an elevator and feed-rollers journaled above the elevator, of shakers suspended between the rollers and elevator, knives suspended between the shakers, a crank-shaft in front of the rollers, pivoted levers having their lower ends connected to the shakers and knives, links connecting the levers with the crank-shaft, and means for operating the crank-shaft and feed-rollers from the elevator, substantially as herein shown and described.

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Witnesses:
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HENRY BERG.