

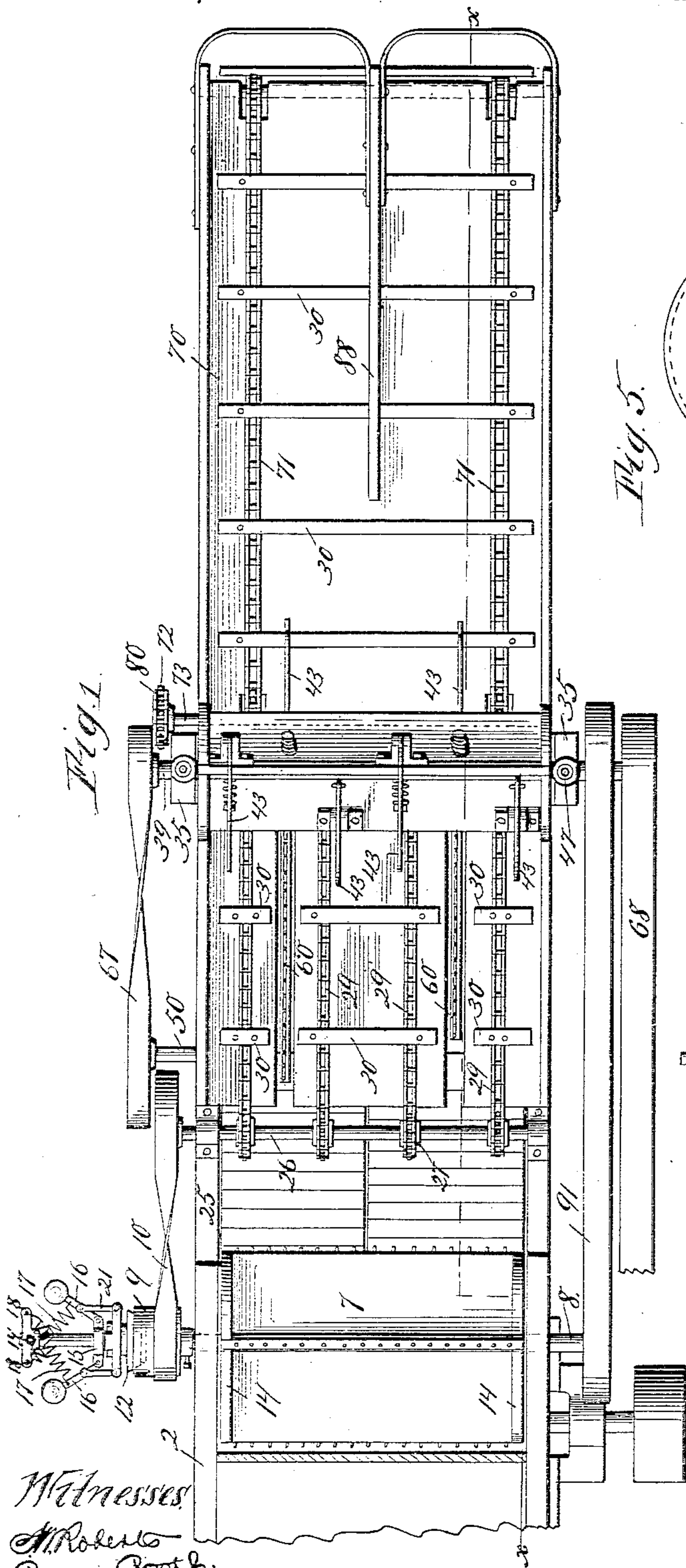
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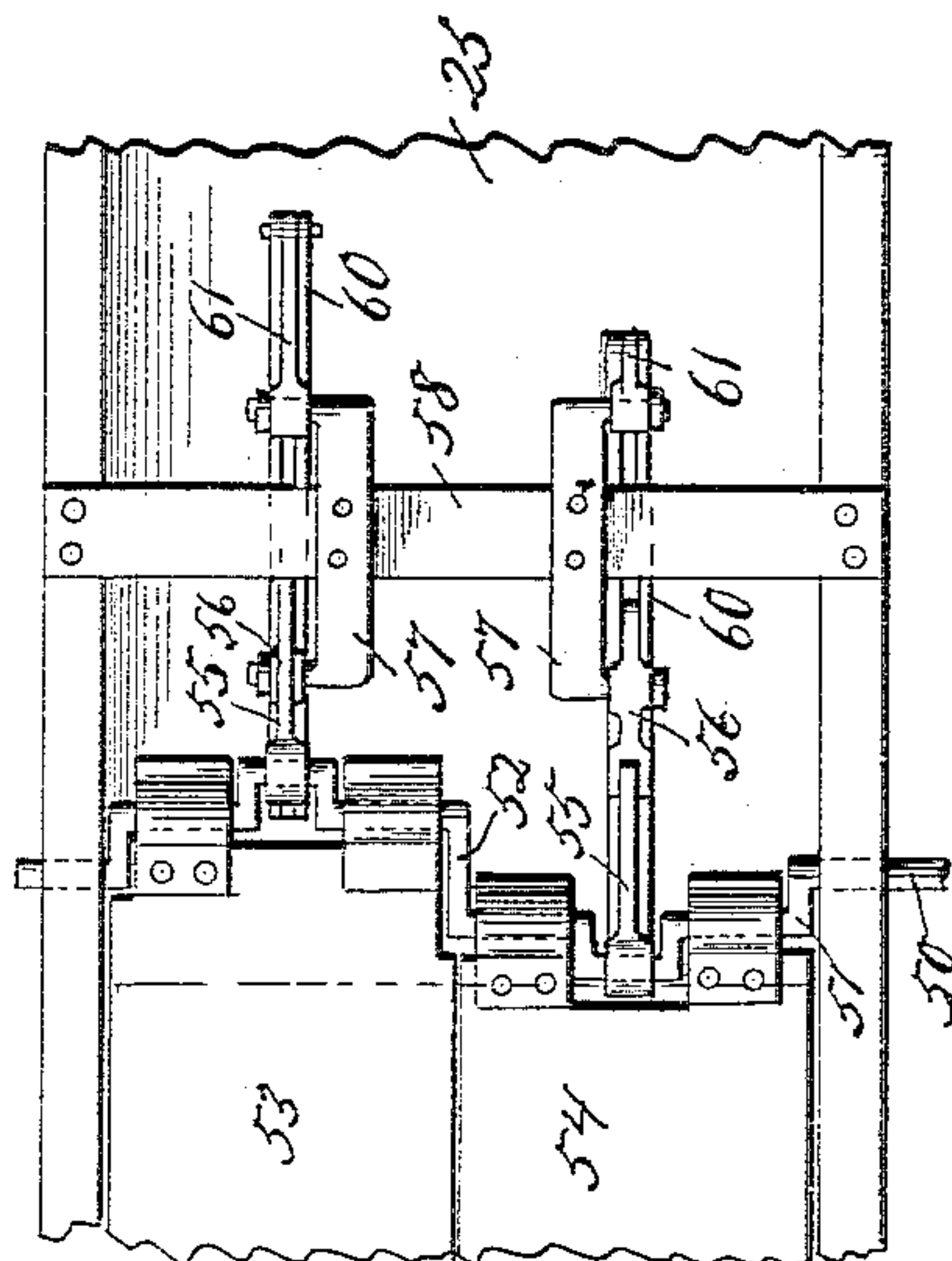
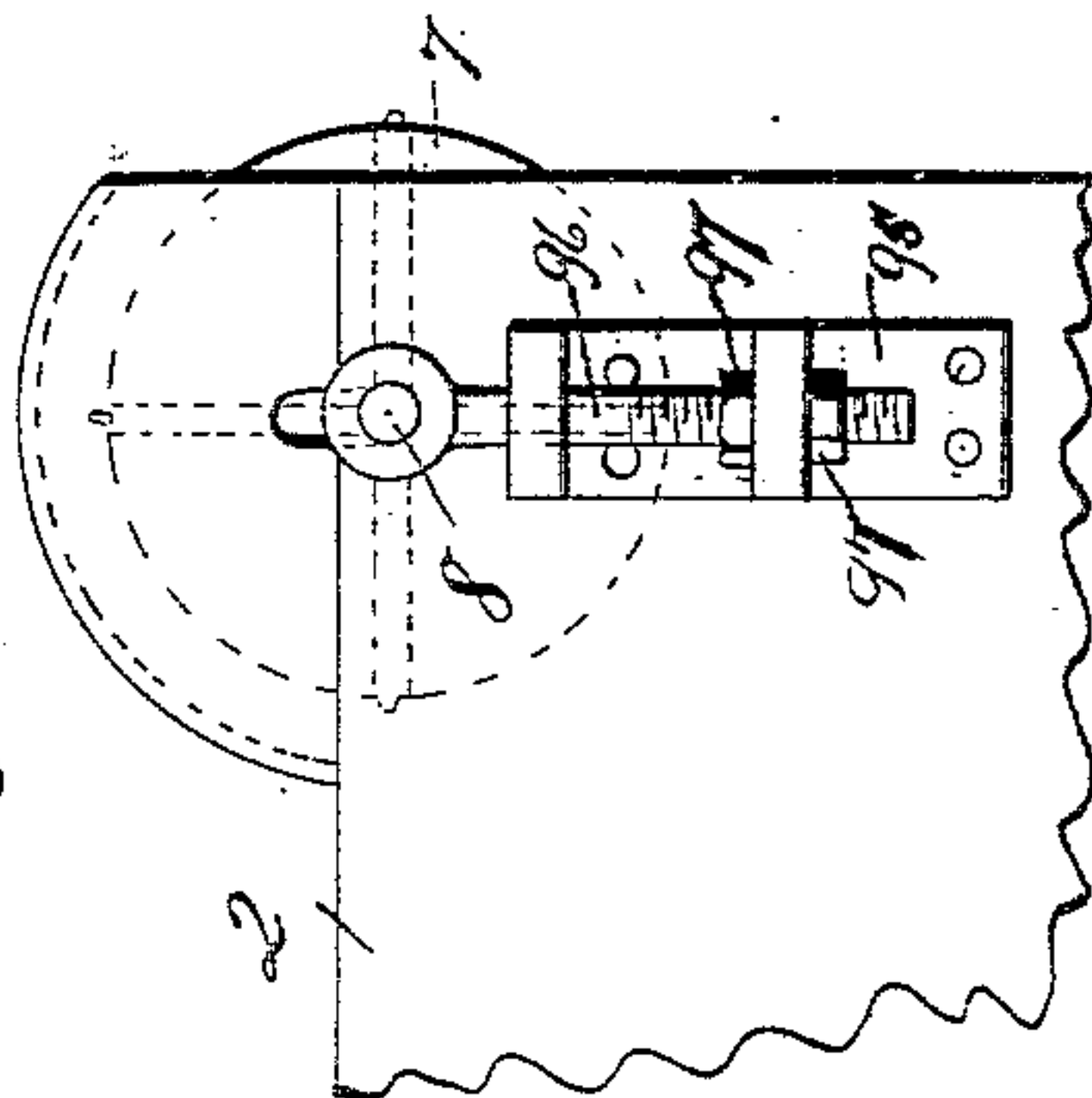
E. B. KARN.
BAND CUTTER AND FEEDER.

No. 445,835.

Patented Feb. 3, 1891.



Witnesses
M. Roberts
Orris Booth



Inventor:
Edwin B. Karn.

By Paul & Merriam, Attys.

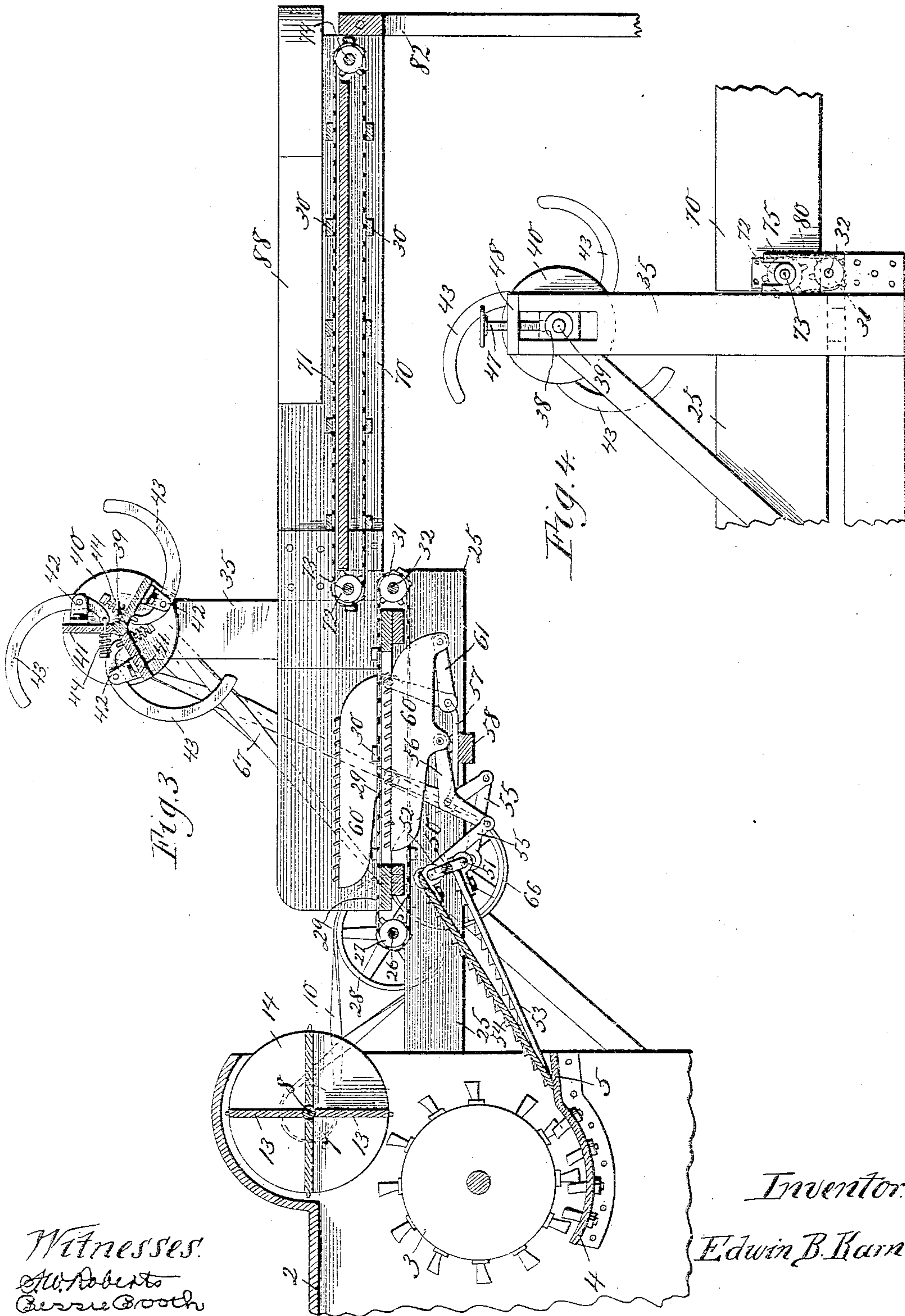
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By Paul H. Allen

UNITED STATES PATENT OFFICE.

EDWIN B. KARN, OF AMHERST, ASSIGNOR OF ONE-HALF TO CHARLES HAMILTON, OF BRITAIN, SOUTH DAKOTA.

BAND-CUTTER AND FEEDER.

SPECIFICATION forming part of Letters Patent No. 445,835, dated February 3, 1891.

Application filed February 6, 1890. Serial No. 339,461. (No model.)

To all whom it may concern:

Be it known that I, EDWIN B. KARN, of Amherst, in the county of Marshall and State of South Dakota, have invented certain Improvements in Band-Cutters and Feeders, of which the following is a specification.

My invention relates to attachments to thrashing-machines; and its object is to provide improved means for automatically cutting the bands of bundles of grain delivered to it and loosening and dividing the bundles and feeding them into the machine in a regular manner; and it consists, generally, in the construction and combination hereinafter described, and particularly pointed out in the claims. It is intended as an improvement on the device for which I have filed my application, Serial No. 316,135, filed July 1, 1889.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of my improved band-cutter and feeder. Fig. 2 is a plan view of a portion of the same, looking from below, showing the manner of agitating and feeding the grain. Fig. 3 is a longitudinal vertical section on line *x x* of Fig. 1. Fig. 4 is a detail showing the manner of adjusting the cutter-shaft and means for removing the outer section of the carrier. Fig. 5 is a detail showing manner of adjusting the beater.

In the drawings, 2 represents a portion of the thrashing-machine inclosing the cylinder 3 and concave 4, having the projecting shelf 5. Directly above the cylinder 3 and a little forward of it is arranged a beater 7, preferably constructed of several blades or beaters 13, secured between two end disks or carriers 14, the blades or beaters 13 extending from the center outwardly, the whole secured upon the shaft 8, its ends extending through the incasing-walls 2, one end being provided with a pulley rotated by means of the belt 9, the other provided with the loose friction-pulley 9, carrying the belt 10. I prefer to make the beater 7 adjustable by providing a casting 95, rigidly secured upon the frame of the machine at both ends of the beater and provided with the adjusting-bolt 96 and its nuts 97, said bolt carrying at its upper end in a suitable enlargement thereof the shaft 8. The pulley

9 is adapted to be rotated by means of the friction-clutch 12, longitudinally movable upon a feather on the shaft 8. The friction-clutch 12 is operated by means of the governor secured to the shaft 8. A disk 15, rigidly secured to the shaft 8, carries weighted arms 16, pivotally secured in its periphery and held in place by means of the tension-springs 17, secured to them and to the arms 18 of the adjuster 19, which is adjustably secured thereto by means of the set-screws 20, passing through the adjuster and against the shaft 8. To the arms 16 are pivotally secured the connecting-bars 21, which are also pivotally secured to the friction-clutch 12, so that when the shaft 8 is rotated at a speed which overcomes the tension of the springs 17 the weighted arms 16 are thrown out and away from the shaft, forcing by means of the connecting-bars 21 the clutch 12 into engagement with the friction-pulley 9, carrying it with the shaft 8, thereby propelling the belts or carriers of the feeder, as hereinafter more fully described.

A frame 25, secured to the casing 2 and projecting in front of it, has mounted upon it in suitable bearings the shaft 26, carrying the sprocket-wheels 27, and rotated by means of the belt 10 over the pulley 28. Upon the sprocket-wheels 27 are link belts 29, upon which are secured suitable carrier-blocks 30, said belts passing over suitable sprocket-wheels 31, secured upon the shaft 32, having its bearings at the outer end of the frame 25, forming a carrier from the outer end of said frame. Mounted upon suitable standards 35, secured to and near the end of the frame 25, is the band-cutter, which is preferably constructed by providing two disks 40, secured to the shaft 39, carrying between them the blades 41, upon which are secured the supports 42, to which are pivotally secured the sickle-shaped knives 43, which are also provided with the tension-springs 44.

The shaft 39 has its bearings 38 adjustably secured to the standards 35 by means of the adjusting-screw 47, passing through a screw-threaded plate 48, and secured to said bearings, whereby the depth of the cut of the knives may be accurately regulated so as to

be equally as effective with small bundles as large ones.

On the under side of the frame 25 and secured in suitable bearings in it is the crank-shaft 50, having the cranks 51 and 52, extending in opposite directions, each carrying one end of the reciprocating feeders 53 and 54, respectively, the other end resting upon the shelf 5 of the concave, so that when one of said feeders is elevated by its crank the other is lowered, the other end sliding horizontally upon the shelf 5. The cranks 51 and 52 are compounded so as to form a middle bearing in each for the connecting-arms 55, which are pivotally secured at their outer ends to the angularly-pivoted lever 56, which is supported by its pivot in a casting 57, secured to the timber 58 of the frame 25. The feeders have bearings on each side of the bearing of the arms 55. The other ends of the angular levers 56 are pivotally secured to toothed agitators 60, which are further supported by the arms 61, pivoted thereto, and also to the casting 57, so that as the crank-shaft 50 is revolved the toothed agitators are alternately carried upward and forward and returned backward and downward, thereby carrying forward the portion of the bundle in contact without drawing the straw down into the opening in which the agitators work. The relative speed of the chains and agitators is such that the agitators travel much faster than the chains, thereby "stringing" the bundle out to several times its original length. The shaft 50 is provided with a pulley 66 and driving-belt 67 from a pulley on the shaft 39 of the band-cutter, which is driven by the main driving-belt 68 on the other side of the machine. The shaft 39 is also provided with a pulley carrying the belt 91, which drives the beater 7 by a pulley on the shaft 8.

A detachable extension 70 is provided, having the endless chain 71, carried upon suitable sprocket-wheels 72 upon shafts 73 and 74, having their bearings in the frame of the extension 70. The shaft 73 at the end next the frame 25 projects outside the frame of the extension 70 and rests in U-shaped bearings 75, secured in the frame 25 above the shaft 32. The shaft 73 is rotated by means of a short connecting-chain 80 over sprocket-wheels on the end of the shaft 73 and the shaft 32, so that the extension-conveyer is carried at the same speed as the one next the thrashing-machine. This may be varied, the extension-conveyer being made to go faster or slower, as desired.

At the outer end of the extension 70 is pivotally secured the support 82, by means of which the extension may be raised or lowered upon the shaft 73, which forms a pivot in its bearings in the frame 25 by moving the foot of the support 82 out so that it stands at an angle or vertically. The extension 70 is supported on the frame 25 by means of the shaft 73 in the U-shaped bearings 75, and it may be easily removed when moving the machine from place

to place by merely removing the chain 80, which holds it in its bearings. A longitudinal division-board 88 is arranged on the extension-carrier 70, extending from the outer end nearly to the other, dividing it near its center into two separate channels, into which the bundles are thrown, to be carried forward to the machine by the cleats 30 on the chain.

The operation of the machine is as follows: The thrashing-machine being put in motion, the belt 68, which is connected with the machine so as to be driven from it directly to the engine or other source of power, drives the shaft 39 and by means of the belts 91 and 67 the beater 7 and the crank-shaft 50, respectively, so that the beater 7, the reciprocating feeders 53 and 54, and the agitators are put in motion at the same time as the cylinder of the thrashing-machine. The shaft 8, on which is mounted the friction-pulley 9, being rotated when it has attained a speed sufficient to overcome the tension of the springs 17, carries with it the pulley 9, which is clutched by the arms 16 being thrown outwardly, pushing the feathered clutch in engagement with it. The pulley 9 by means of the belt 10 and the connecting-chain 80 then moves the carriers in the frames 25 and 70, bringing forward the bundles as they are thrown onto the extension 70. The bundles are thrown upon the extension 70, so that they are carried forward on the carriers lengthwise, bringing them under the band-cutting knives, so that the knives move at right angles to the band of the bundle. The speed of the cutter is so arranged that it is much more rapid than that of the carrier upon which the bundle rests, which, together with the sickle shape of the knives, which thereby does the cutting with a downward drawing stroke, permits the band being severed without retarding the movement of the bundle. As the bundle passes off the extension-carrier it falls upon the agitators 60, which not only loosens the straw from its former compressed condition, but carries out and forward the straw nearest the center, stringing it out, and at the same time spreading the straw over the carriers 30. As the bundles pass off from the carriers 30 they are tipped downward toward the cylinder by the beaters 13, and the feeders 53 and 54 aid in feeding the grain to the cylinder.

I claim as my invention—

1. In a band-cutter and feeder, the combination, with the rotating shaft or frame provided with the transverse plates 41, of the pivoted knives 43, carried around with said shaft or frame, and springs acting on said knives to restore them to their normal position when moved therefrom, substantially as and for the purposes set forth.

2. In a band-cutter and feeder, the combination, with the rotating shaft or frame provided with the transverse plates 41, of the sickle-shaped knives 43, pivoted upon said plates, and springs to restore said knives to their normal position when removed there-

from, substantially as and for the purposes set forth.

3. The combination, with the frame 25, provided with the bundle-carrying belts extending longitudinally of said frame, of the reciprocating agitators arranged between said belts, and the removable extension 70, adapted to be secured to said frame and provided with the bundle-carrying belts 71, substantially as described.

4. The combination, with the bundle-carrying belts or chains 29, of the reciprocating agitators 60, arranged between said belts, the reciprocating feeders 53 and 54, and the shaft 50, provided with the double cranks connected both with said feeders and said agitators, substantially as described.

5. The combination, with the thrashing-cylinder, of the revolving beater arranged above said cylinder, the reciprocating agitators, the revolving cutters, and the carrying belts or chains, means for driving said beater, agitators, and cutters from said cylinder, and a friction governor-clutch arranged upon the shaft of said beater and controlling said carrying-chains to bring them into operation with the other parts after said parts have been started, substantially as described.

In testimony whereof I have hereunto set my hand this 28th day of January, 1890.

EDWIN B. KARN.

In presence of—

A. C. PAUL,
BESSIE BOOTH.