

(No Model.)

2 Sheets—Sheet 1.

A. JOHNSON.
BAND CUTTER AND FEEDER.

No. 539,814.

Patented May 28, 1895.

FIG. 1.

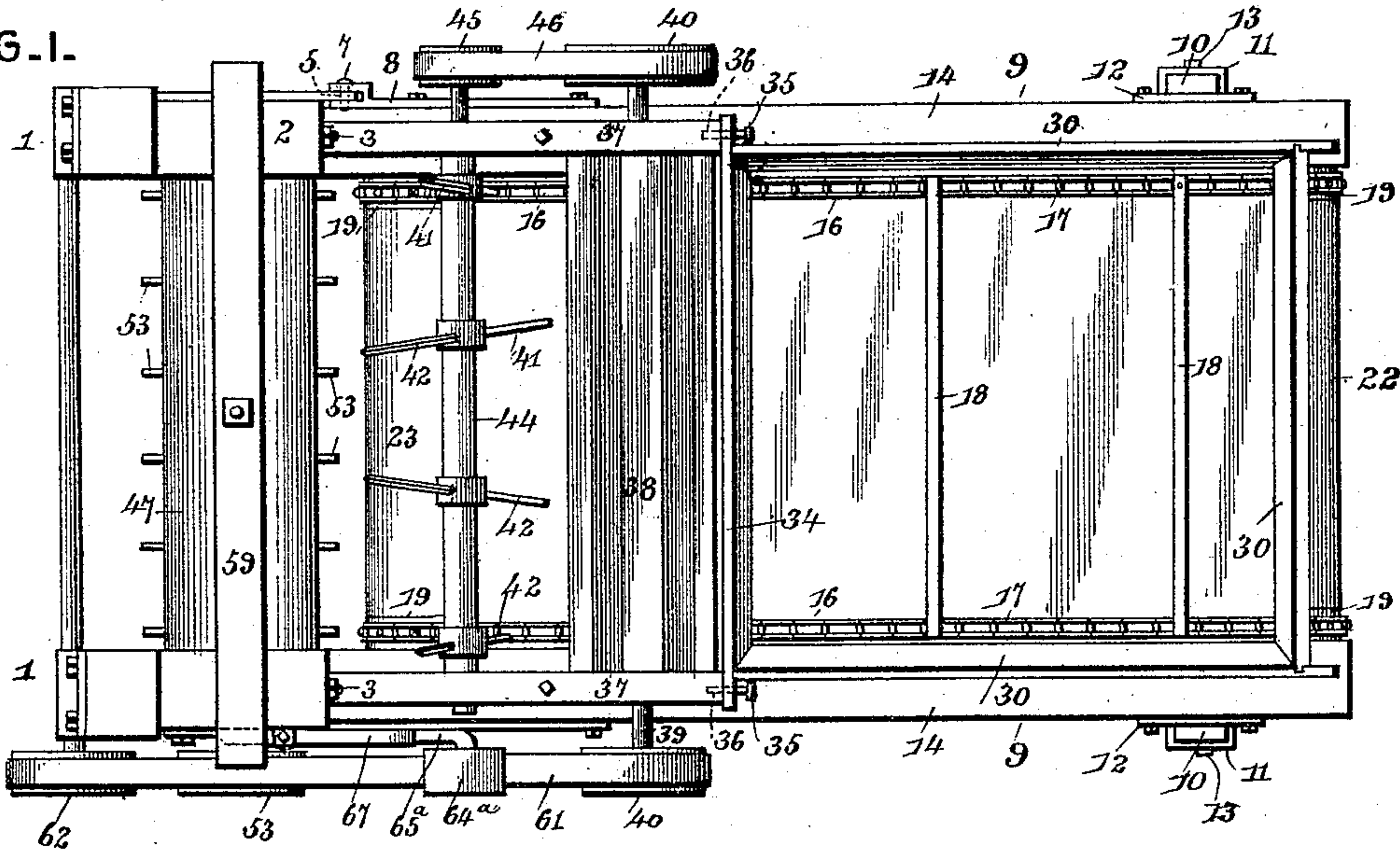


FIG. 4.

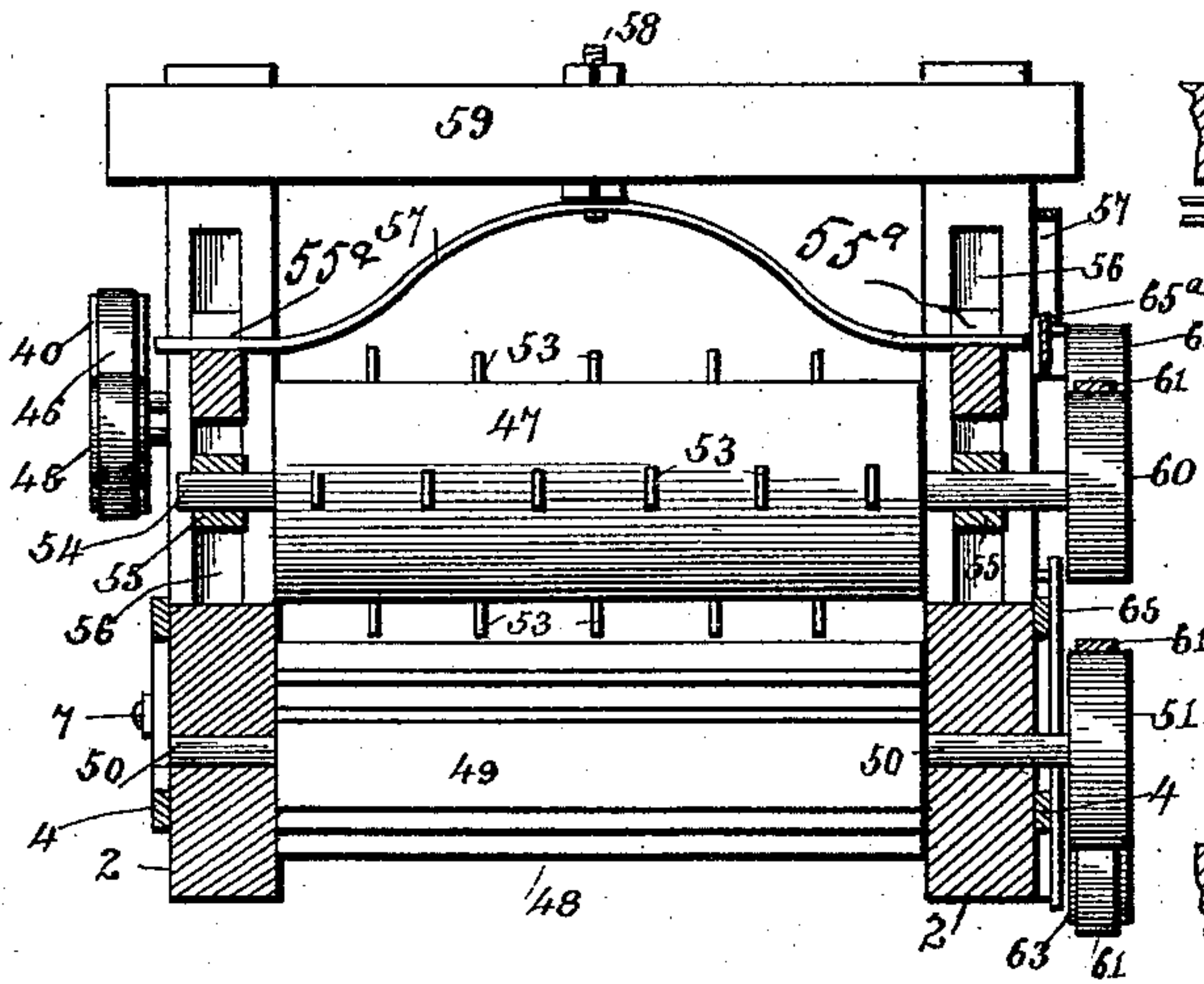


FIG. 5.

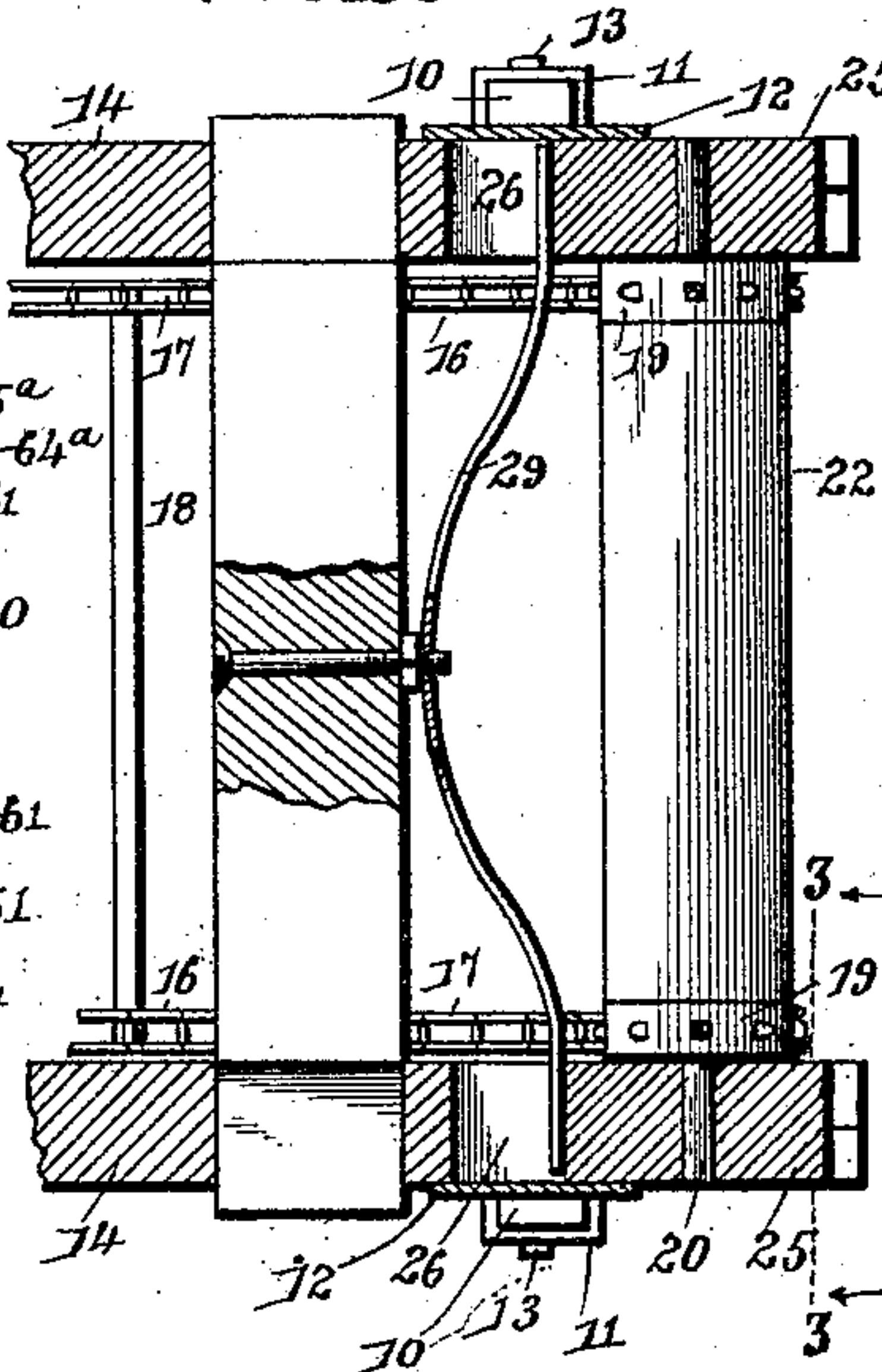
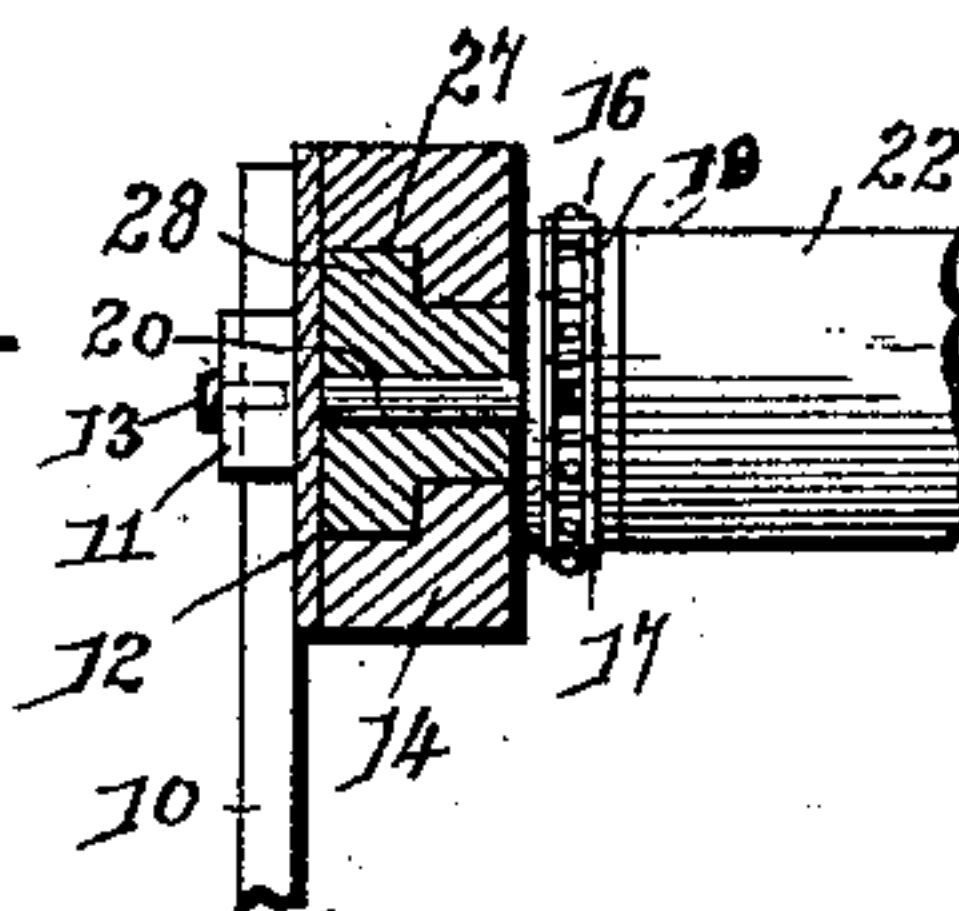


FIG. 6.



Inventor

Augustus Johnson

By his Attorneys.

Witnesses

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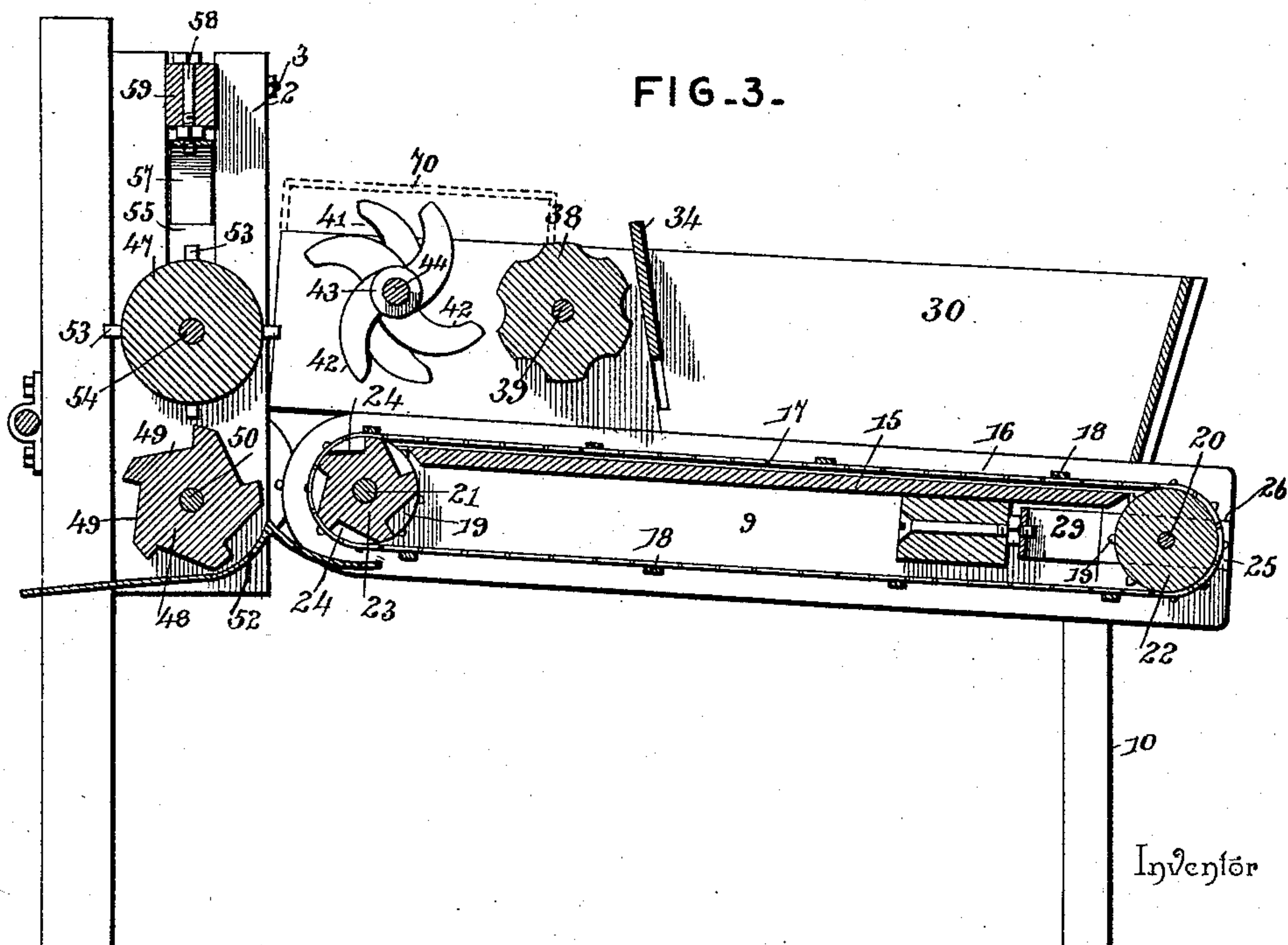
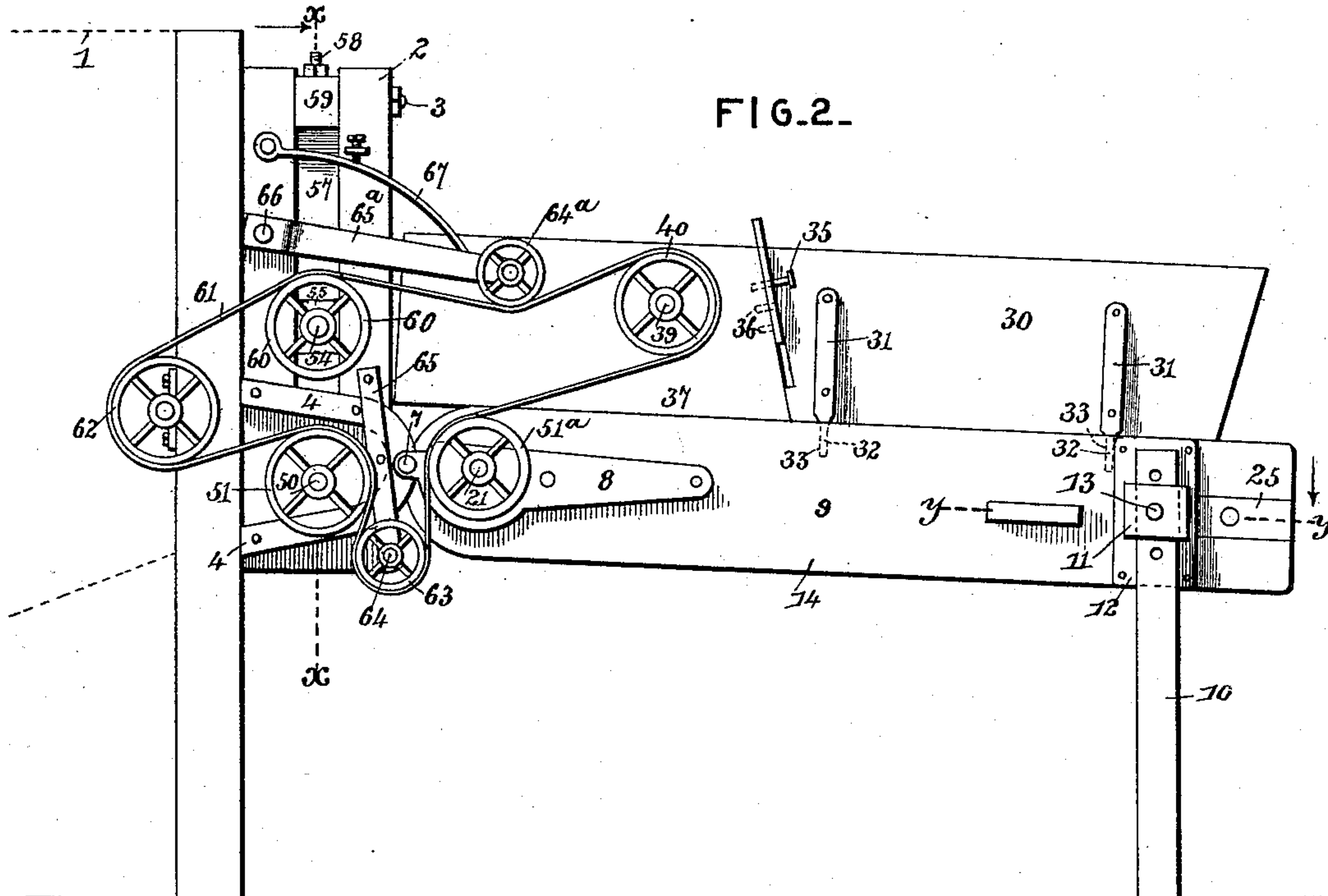
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

AUGUSTUS JOHNSON, OF FALUN, KANSAS.

BAND-CUTTER AND FEEDER.

SPECIFICATION forming part of Letters Patent No. 539,814, dated May 28, 1895.

Application filed May 29, 1894. Serial No. 512,935. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS JOHNSON, a citizen of the United States, residing at Falun, in the county of Saline and State of Kansas, have invented a new and useful Band-Cutter and Feeder, of which the following is a specification.

This invention relates to band cutters and feeders; and it has for its object to effect certain improvements in machines of this character whereby the same shall be rendered particularly efficient in its function of feeding all kinds of grain to separator or thrashing machines.

To this end the main and primary object of the present invention is to provide a band cutter and feeder that shall be simple in construction, light in weight, and easily handled by reason of the detachable and adjustable connection of certain parts thereof, while at the same time the different parts of the machine shall provide efficient means for cutting the bands of the bundles and distributing and feeding regulated quantities of grain to the cylinder of the separator without choking or clogging.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a top plan view of a band-cutter and feeder machine constructed in accordance with this invention. Fig. 2 is a side elevation thereof. Fig. 3 is a central vertical longitudinal sectional view thereof. Fig. 4 is a transverse sectional view on the line *xx* of Fig. 2. Fig. 5 is a similar view on the line *yy* of Fig. 3. Fig. 6 is a detail sectional view on the line *zz* of Fig. 5.

Referring to the accompanying drawings, 1 designates the cylinder end of an ordinary separator or thrashing machine to which is removably bolted the fixed feeder frame 2, the bolt 3, providing the connection between the said fixed frame and the rear part of the separator machine, whereby the said fixed frame may be readily removed at any time when it may be necessary to repair any part of the machine mounted therein, and attached

to opposite sides of the fixed feeder frame 2, are the U-shaped attaching plates 4, that are provided in their outer closed ends with the bolt openings 5, to receive the removable hinge bolts 7, that also engage the bifurcated outer ends of the bracket plates 8, that are secured on opposite sides of the inner end of the hinged feeder frame 9. The hinged connection between the inner end of the hinged feeder frame 9 and the fixed feeder frame 2, provides means whereby the said frame 9, may be readily disconnected from the frame 2, for the purpose of loading the same onto the separator machine while being transported, or onto a separate truck as desired, and also provides means whereby the said hinged feeder frame may be adjusted to any pitch or inclination desired, below the horizontal plane, according to the character of the work, and the said frame 9, is held stationary in its adjusted inclined position by means of the outer removable and adjustable supporting legs 10. The supporting legs 10, loosely engage at their upper ends in the open sockets 11, projected outwardly from the socket plates 12, secured to opposite outer ends of the frame 9, and said legs are held in their adjusted positions in said sockets by means of the adjusting screws 13, passing through perforations in the sockets and in said legs.

The hinged feeder frame 9, essentially comprises the opposite frame sides 14, that are connected by an intermediate imperforate apron platform 15, over which passes the endless open feeder apron 16.

The feeder apron 16, comprises the parallel sprocket chains 17, connected by a series of transverse parallel apron slats 18, which serve to carry the grain over the platform 15, to the band cutting and cylinder feeding devices of the machine, and the opposite end portions of the sprocket chains of said feeder apron pass over the opposite sets of sprocket wheels 19, that are mounted on the opposite roller shafts 20 and 21, journaled respectively at the outer and inner ends of the hinged feeder frame 9, and also mounted on the said roller shafts are the outer and inner apron rollers 22 and 23, respectively, over which pass the slats of the apron, and the inner of said apron rollers 23, is provided with a peripheral series of longitudinal feed notches 24, the shoul-

ders of which notches are carried forwardly in a direction beyond the inner end of the hinged feeder frame and serve to catch the loose grain and throw the same forward to the cylinder feeding devices which will be presently referred to.

The outer roller shaft 20, has its spindle extremities thereof journaled in the movable bearing blocks 25, that are arranged to work in the bearing slots 26, formed in the outer ends of the opposite frame sides of the feeder frame 9, and the upper and lower edges of said slots are provided with the slide grooves 27, in which work the ribs 28, projected from the upper and lower edges of said bearing blocks, and the said bearing blocks are normally pressed outwardly by the adjusting spring 29.

The adjusting spring 29, is arranged transversely under the outer end of the apron platform 15, and has its opposite free extremities project into the rear ends of the slots 26 behind the blocks 25, in order to provide means for holding the feeder apron properly stretched, whereby choking and clogging is effectually obviated.

Removably mounted over the hinged feeder frame 9, is the hopper box 30. The hopper box 30, comprises a rectangular frame consisting of opposite connected side and end boards, and secured to the opposite side boards of the said rectangular hopper are the opposite pairs of attaching arms 31, provided with rounded pin extremities 32, that are adapted to removably fit in the pin openings 33, formed in the opposite frame sides 14, of the frame 9, to provide for removably securing the said hopper box in position over the said feeder frame to receive the bundles of grain or loose grain that are thrown upon the apron 16.

The hopper box 30, is located in a position to inclose the outer portion of the feeder apron 16, and the grain that is thrown into the said hopper box is prevented from working off at the side of the feeder frame and is held onto the apron until caught up thereby, and such grain is carried forward by the apron under the vertically adjustable regulating board 34. The vertically adjustable regulating board 34, is arranged at the inner end or side of the hopper box 30, and forms the inner end board therefor, and the vertical adjustment of said board is secured preferably by means of the adjusting pins 35, arranged to engage any one of the series of openings 36, in opposite ends of said board and to engage openings in the outer ends of the opposite side bearing boards 37, that are bolted onto the opposite frame sides of the feeder frame 9, directly in front of the hopper 30, and the regulating board, thus vertically adjustable, serves to regulate the quantity of grain that passes to the auxiliary corrugated feed roller 38.

The auxiliary corrugated feed roller 38, is mounted on the roller shaft 39 journaled in

the opposite side bearing boards at one side of and in close proximity to the regulating board 34, and carrying upon its opposite ends the belt wheels 40. The said corrugated feed roller 38, assists the apron 36, in carrying the grain forward and also serves to hold the grain down onto the apron so that the band cutting knives 41, can properly engage in the bundles of the grain to cut the bands and to spread the grain. The band cutting knives 41, are S-shaped, being provided with the reversely disposed curved blades 42, extended from a central hub 43, made fast on the knife shaft 44. The S-shaped knives 41, are arranged at regularly spaced distances apart on the knife shaft 44, and are unparallel and disposed at an oblique angle to the knife shaft and reversely to each other, whereby, the knife blades will not only serve to cut the bands from the bundles but will also spread the grain transversely throughout the inner end portion of the hinged feeder frame before it is discharged therefrom. The knife shaft 44, is also journaled in the side bearing boards 37, in front of the shaft 39, and carries upon one end the belt wheel 45, over which passes the belt 46, which passes over one of the pulleys of the shaft 39, so as to provide means for transmitting motion to the knife shaft from the said roller shaft.

All the grain that is fed onto the feeder frame 9, is fed therefrom by the band cutting knives and the inner peripherally notched apron roller 23, to the upper and lower feed rolls 47 and 48, respectively. The lower of said feed rolls 48, is provided with a peripheral series of longitudinal feed notches 49, the shoulders of which notches are carried forwardly in a direction toward the cylinder of the separator or thrashing machine, and therefore corresponds to the longitudinal feed notches 24, of the inner apron roller 23. The said peripherally notched lower feed roll 48, is mounted on the roller shaft 50, journaled in the lower part of the fixed feeder frame 2, and carries at one end the belt wheel 51, and the said roller 48, serves to catch all loose grain and feed the same to the cylinder of the thrashing machine, and in order to carry the loose grain to the roller 48, that is not thrown forward by the inner apron roller 23, a grain trough 52, is arranged underneath and in the space between the rollers 23 and 48. The upper feed roll 47, is provided in its periphery with a series of short feed spikes or teeth 53, that travel in close proximity to the top of the lower notched feed roll 48, and serve to positively feed the grain to the cylinder of the thrashing machine, and by reason of the arrangement of these two feed rolls the spikes of the upper roll will not only catch and pull the grain in between the two rolls, but will also hold the grain and cause the same to be gradually fed to the cylinder of the thrashing machine, thereby preventing choking and clogging. The said feed roll 47, is mounted on the upper roller shaft

54, the opposite extremities of which are mounted in the vertically movable bearing boxes 55, that are carried by the slide frames 55^a mounted to slide in the bearing slots 56 formed in opposite sides of the fixed feeder frame 2, and arranged to bear on top of the frames 55^a carrying the opposite bearing boxes 55, are the opposite free extremities of the transverse bowed adjusting spring 57, secured centrally by the bolt 58, to the top cross bar 59, connecting the upper opposite ends of the frame 2, and the said spring 57, serves to hold the upper toothed feed roll 48, down to its work directly over the lower peripherally notched roller 48.

The upper roller shaft 54, has mounted on one end thereof outside of the frame 2, the belt wheel 60, over which passes the upper portion of the drive belt 61, that is driven from the drive pulley 62, that is connected with the gearing of the separator machine, and the upper portion of said belt 61, is also extended to one of the belt wheels 40, of the roller shaft 39, to provide means for communicating motion to the auxiliary feed roller 38, and to the band cutting knives. The lower portion of the said drive belt 61, is passed over the belt wheel 51, at one end of the shaft 50, and also over the belt wheel 51^a, at one end of the shaft of the inner notched apron roller 23, to provide means for communicating motion to both of said notched rollers in the same direction, and the portion of the belt that passes over the belt wheels 51 and 51^a, is held properly in contact with said wheels by means of the intermediate idler wheel 63, journaled on the lower spindle extremity 64, of the bracket arm 65, attached to one side of the frame 2, and the upper portion of the drive belt is maintained at the proper tension, so that it will adjust itself to the adjustment of the feeder frame 9, by means of the tension pulley 64^a.

The tension pulley 64^a, is journaled at the outer end of the pivoted supporting arm 65^a, that is pivoted at its inner end at 66, to one side of the frame 2, and is held normally depressed by means of the adjustable adjusting spring 67, the free end of which bears on the arm 65^a and the other end of which is pivotally secured to one side of the frame 2, above the arm 65.

From the foregoing it will be understood by those skilled in the art that the herein described machine will efficiently secure the several functions for which it is designed, and at this point it may be noted that the auxiliary feed roller 38 and the band cutting knives may be inclosed by a suitable housing 70, shown in dotted lines in one of the figures of the drawings, and providing means for preventing a scattering of the grain and also preventing the operator from being injured by the knives, and it will also be understood that the gearing connections may be changed for any equivalent construction, said gearing being

sized and arranged so that the feeder apron and feed rollers of the machine will travel at the same uniform speed to prevent choking or clogging thereof, while the band cutter may be speeded to as rapid a rotation as desired, and other changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a band cutter and feeder, the combination of a feeder frame provided at its opposite upper sides with side bearing boards having at one end a series of openings, the endless apron arranged within the frame, a hopper box removably supported on the feeder frame above the apron and provided with an inner open end, a regulating board mounted for vertical adjustment at the inner open end of the hopper box, adjusting pins passed through the ends of said regulating board and adapted to engage the openings at one end of said side bearing boards to secure the regulating board in any vertically adjusted position, an auxiliary longitudinally corrugated feed roller supported between the side bearing boards directly adjacent to one side of the regulating board to receive the grain as it passes thereunder, and a rotary band cutter mounted between the side bearing boards closely adjacent to one side of the corrugated feed roller, substantially as set forth.

2. In a band cutter and feeder, the combination of the fixed feeder frame, upper and lower feed rolls mounted within said fixed frame, the upper of said rolls being provided with short teeth, and the lower of said rolls being provided with a peripheral series of integrally formed longitudinal feed notches, the shoulders of which are adapted to be carried forwardly toward the cylinder of the separator, an outer feeder frame connected to the fixed frame, the opposite apron rollers journaled in said outer frame, and the inner of which rollers is disposed adjacent to the lower feed roll and is provided with end chain wheels, and a peripheral series of integrally formed longitudinal feed notches, the shoulders of which travel toward said lower feed roll, the open apron arranged on said apron rollers and having endless chains engaging the chain wheels of the inner roller, the band cutter, and a loose-grain trough arranged below and projecting up between the notched roll and roller, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

AUGUSTUS JOHNSON.

Witnesses:

J. P. VROORT,
C. A. DAHL.