

No. 744,153.

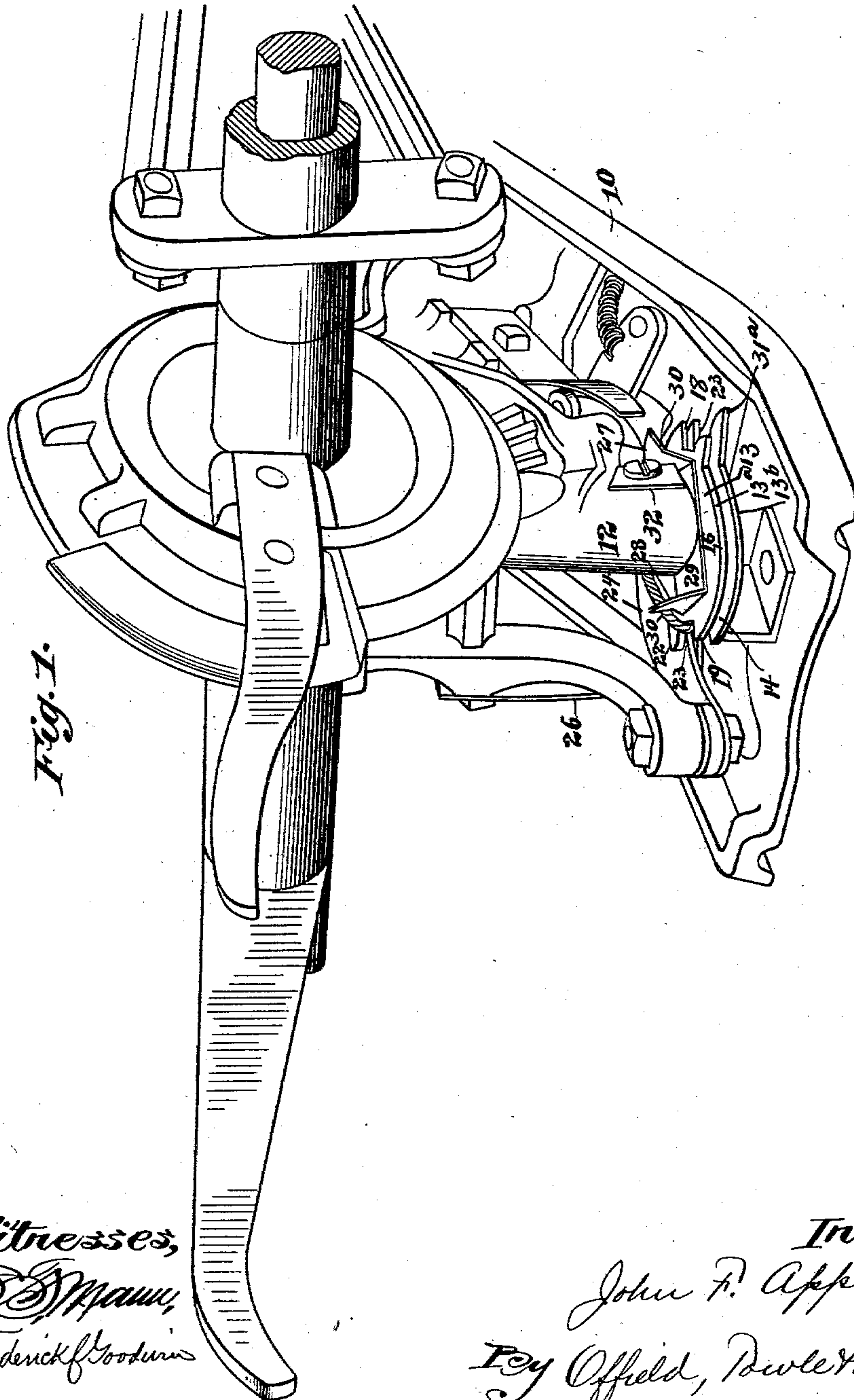
PATENTED NOV. 17, 1903.

J. F. APPLEBY.
KNOTTING MECHANISM FOR GRAIN BINDERS.

APPLICATION FILED OCT. 18, 1897.

NO MODEL.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

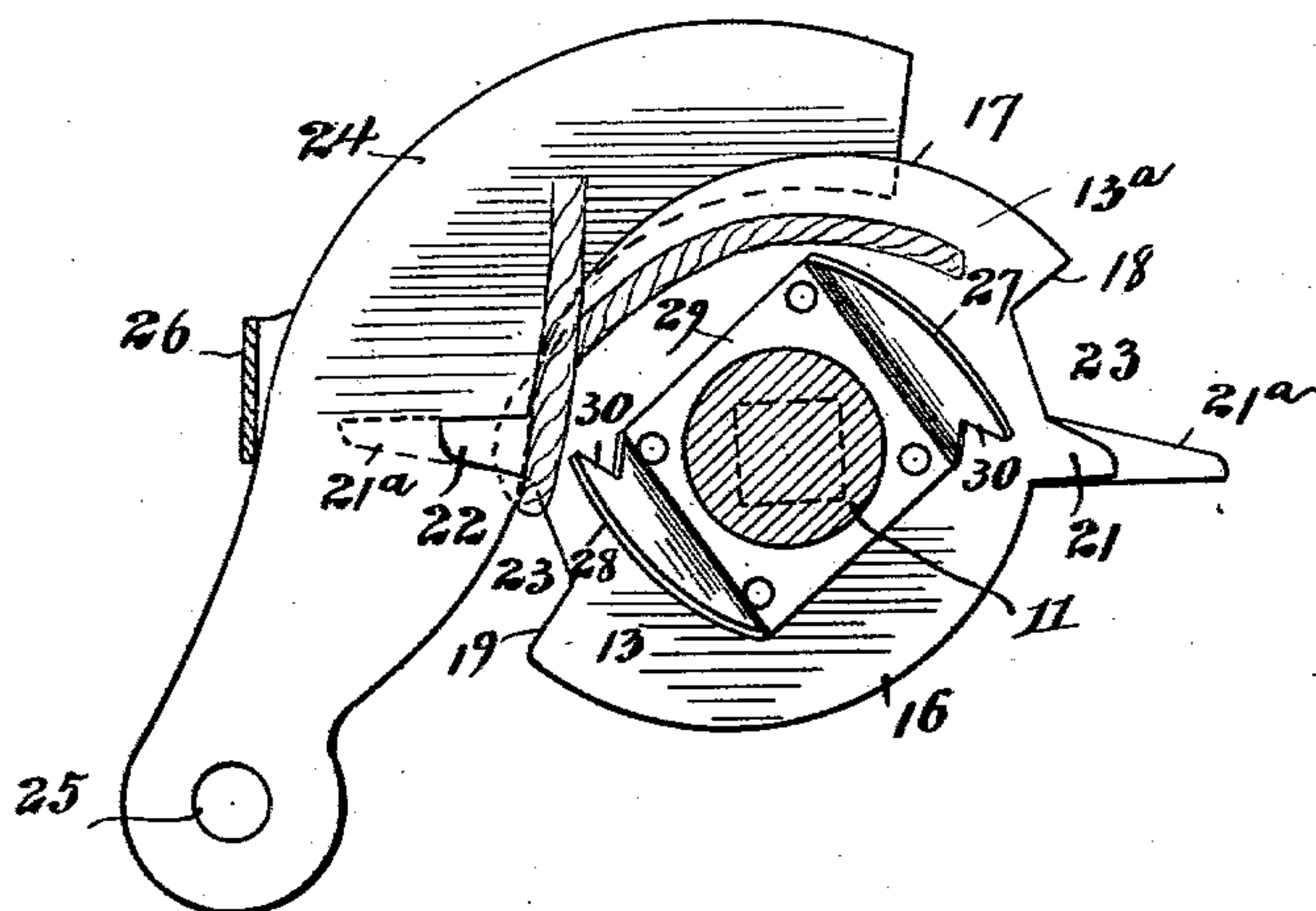
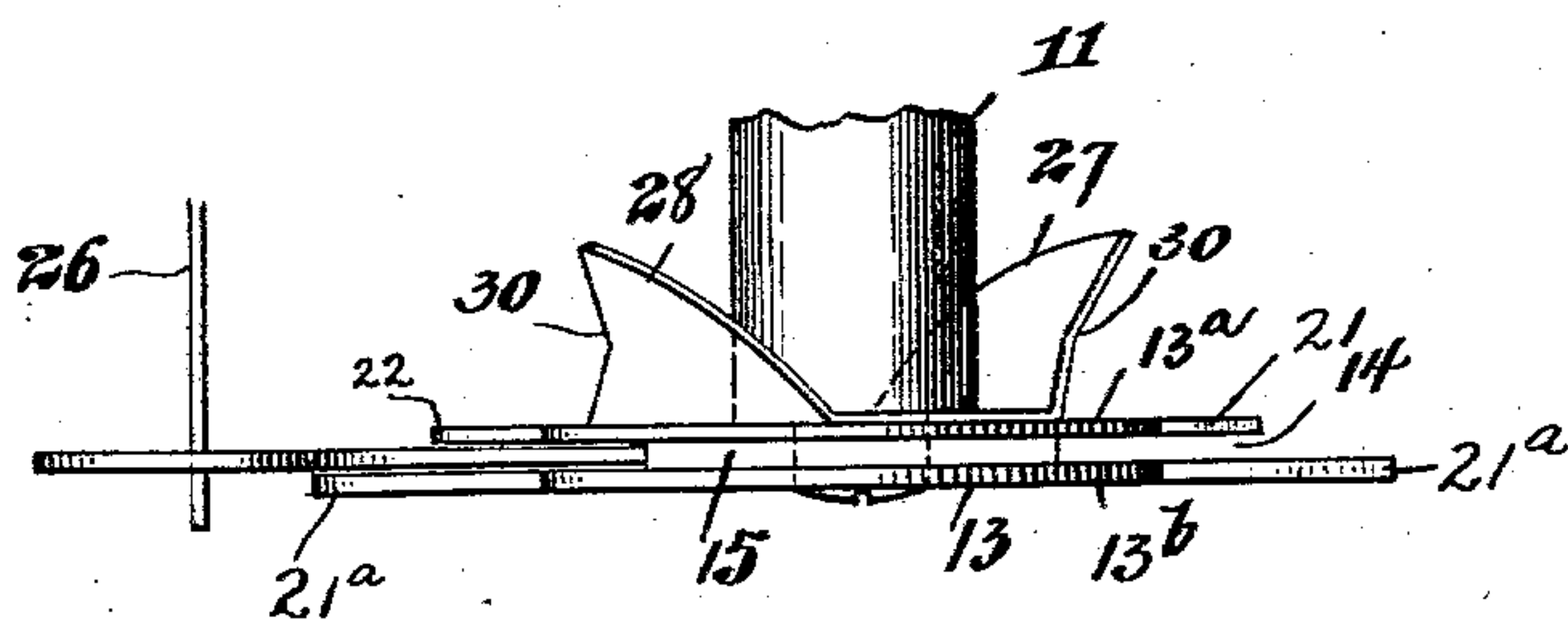


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN F. APPLEBY, OF HARVEY, ILLINOIS.

KNOTTING MECHANISM FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 744,153, dated November 17, 1903.

Application filed October 18, 1897. Serial No. 655,511. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. APPLEBY, of Harvey, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Knotting Mechanism for Grain-Binders, of which the following is a specification.

My invention relates to the knotting mechanism of grain-binders, and more particularly to that portion of said mechanism commonly known as the "cord-holder," and has for its object to provide a cord-holder of simple construction composed of comparatively few parts, and therefore not likely to get out of order, and by means of which the cord will be properly held and presented to the knotter and cord-cutting knife, the severed ends being delivered out of the cord-holder without liability of clogging, the two strands of the cord being kept separated during the period of rotation of the holder.

To these ends my invention consists in certain novel features, which I will now proceed to describe and will then particularly point out in the claims.

My present invention is in the nature of an improvement upon my prior patent, No. 591,614, to which reference may be made for a more complete illustration of the parts to which my present invention is applicable.

In the accompanying drawings, Figure 1 is a perspective view of the knotter-head and breast-plate of a grain-binder embodying my invention, the needle being withdrawn. Fig. 2 is an enlarged sectional plan showing the cord-holder and its coöperating arm or shoe, and Fig. 3 is an edge view of the construction shown in Fig. 2.

My improvements may be readily applied to any of the leading types of grain-binding harvesters, and I have only shown so much of the mechanism of such a machine as is necessary for the purpose of illustrating the application thereto of my improvements.

In the accompanying drawings, 10 represents the breast-plate of the machine, and 11 the cord-holder shaft, which is mounted within a sleeve 12 and is driven intermittently in a well-known manner, the gearing being so timed that the cord-holder shaft performs a half-revolution during the tying of each bundle. On the lower end of the shaft 11 is

mounted the cord-holder disk 13, arranged in a plane at right angles to the axis of revolution of the shaft and provided with a circumferential groove 14. This groove may be formed in the body of the disk when this latter is made in a single piece, or it may be constituted, as in the construction shown in the drawings, by making the cord-holder disk of two thin disks 13^a and 13^b, separated by an intervening washer, collar, or hub 15. In contour the periphery of the cord-holder disk presents two eccentric segments 16 and 17, terminating, respectively, in shoulders 18 and 19, and upon the base or shoulder portion of each of said segments and in advance of the shoulder of the other of said segments are provided the offstanding prongs, teeth, or projections 21 and 22. These latter are arranged in pairs on opposite sides of the groove 14, and, as shown, I have indicated the lower prongs (marked 21^a) as being of considerable length, it being a feature of my present construction that these prongs or teeth may be made of any desired length within practical limits. There are formed between the prongs or teeth 21 and 22 and the shoulders 18 and 19 notches 23 to receive the cord in the manner hereinafter set forth.

Operating in conjunction with the cord-holder disk 13 is an arm or shoe 24, which is pivotally mounted at 25 and held up toward the disk by a spring 26, said shoe having a curved inner edge concentric with the shaft 11 and being adapted to fit within the groove 14 in the disk 13, said groove being slightly wider than the thickness of the arm or shoe 24.

In order to separate the strands of the cord and to guide the strand carried by the needle, I employ the upstanding cord-deflecting plates 27 and 28, which may for convenience of construction be formed integrally with a plate or strip of sheet metal 29, apertured for the passage of the shaft 11 and secured to the disk 13. These deflecting-plates are notched on their front edges, as shown at 30, and their outer sides form an acute angle with the disk 13. The edges of said plates are inclined, preferably, on a curved line. A cord-cutting knife 32 is secured on the sleeve 12 of the shaft 11 in a position back of the knotter-hook.

The operation of the mechanism is as fol-

lows: As the needle advances, carrying the cord across the cord-holder, the strand carried by the needle will be deflected toward the axis of the holder by the edge of the deflecting-plate, and thereby separated from the strand which is engaged by the prong of the disk. As the needle returns, the strand of the cord carried thereby will be deflected, by the eccentric edge of the disk-segment, away from the center of the disk and into the notch 23 between the prong and the shoulder of the adjacent segment, and the continued backward movement of the needle will then draw the strands of the cord back over and around said prong, as shown in Fig. 2. After the knot is tied, the needle-strand which is then lying across the cord-holder is carried by the notched end 30 of one of the plates 27 or 28 into contact with the knife 32, and the cord is severed. By the time the severing of the cord is effected one of the ends thus severed is engaged by the prong or tooth 21 or 22 of the disk and carried into contact with the arm or shoe and held between the edge thereof and the edges of the disk.

It will be seen that the strands of the cord which pass across the cord-holder are kept separated from each other, so that they are prevented from becoming entangled or interfering with each other, and it will also be seen that the needle carries the strand of the cord below the plane of the cord-holder disk on the forward movement, so that said strand crosses the plane of the disk in position to be engaged by one of its prongs or teeth at the next actuation of the disk, the tooth lying in such a position that it engages the cord from the upper side, the return of the needle carrying the strand of the cord over and around the tooth in the manner previously described. It will also be noticed that by the provision of a groove in the disk in conjunction with an arm or shoe to engage said groove the prongs or teeth of the disk may be made of considerable length to insure the proper engagement of the cord, whereas in the construction generally used, wherein the groove is in the arm or shoe, the length of the prongs or teeth of the disk would necessarily be limited by the depth of the groove in the shoe.

Furthermore, it will be noticed that but one strand of the cord is severed and that the severed end is relatively short. The shoulders 18 and 19 of the disk serve to insure the disengagement of the cord from between the arm 24 and groove 14, and the eccentric surfaces of the segments 16 and 17 serve to assist in deflecting the cord into the notches 23.

I claim—

1. A cord-holder comprising, in combination, a rotatable disk composed of two thin plates of metal separated facewise from each other to provide a deep groove between them and having eccentric peripheral segments, each terminating in a shoulder, and outstanding pairs of prongs or pins projecting from said segments near their base, and a cooperating arm or shoe having a curved edge adapted to enter the groove between said plates, said arm or shoe being flat and of uniform thickness slightly less than the width of groove between the plates so as to present no obstruction in the path of movement of the prongs or pins thereover or thereunder, substantially as described.

2. A cord-holder comprising, in combination, a rotatable disk composed of two thin plates of metal separated to provide a deep groove between them and having peripheral eccentric segments, each terminating in a shoulder, and outstanding pairs of prongs or pins projecting from said segments near their base, a cord-receiving notch between the base of each shoulder and its prong, a cooperating arm or shoe having a curved edge adapted to enter the groove of the disk between the plates, said arm or shoe being flat and of uniform thickness slightly less than the width of groove between the plates so as to present no obstruction in the path of movement of the prongs or pins thereover or thereunder, and upstanding deflecting-plates secured to the upper surface of the disk and having inclined edges whereby to separate and deflect a strand of the cord, substantially as described.

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