

No. 771,532.

PATENTED OCT. 4, 1904.

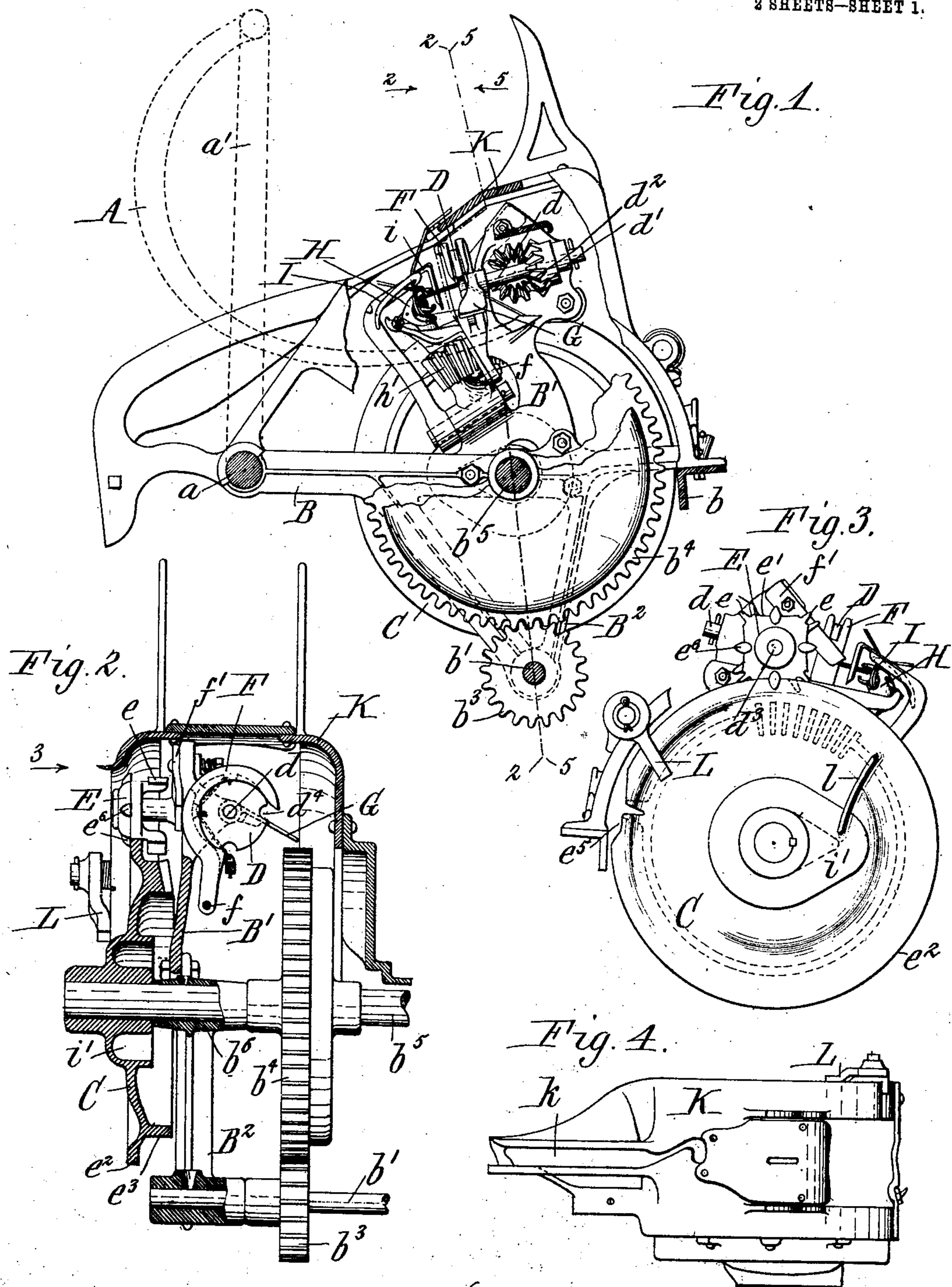
H. J. CASE.

KNOTTER MECHANISM FOR GRAIN BINDERS.

APPLICATION FILED APR. 20, 1903.

NO MODEL.

2 SHEETS--SHEET 1.



Witnesses:

E. A. Volk.

R. W. Runner.

Henry J. Case

Inventor.

By William Howard

Attorneys.

No. 771,532.

PATENTED OCT. 4, 1904.

H. J. CASE.

KNOTTER MECHANISM FOR GRAIN BINDERS.

APPLICATION FILED APR. 20, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 5.

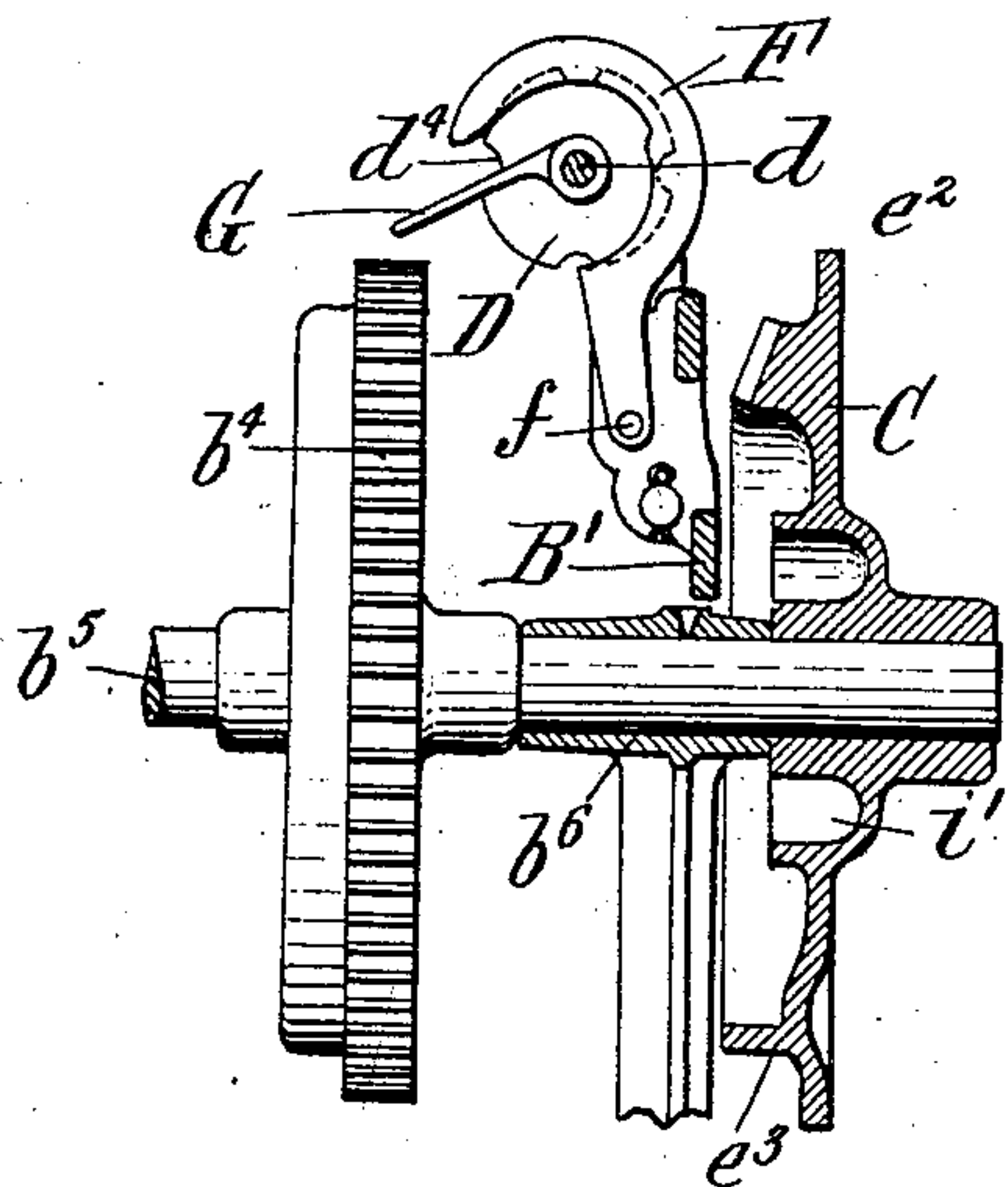


Fig. 6.

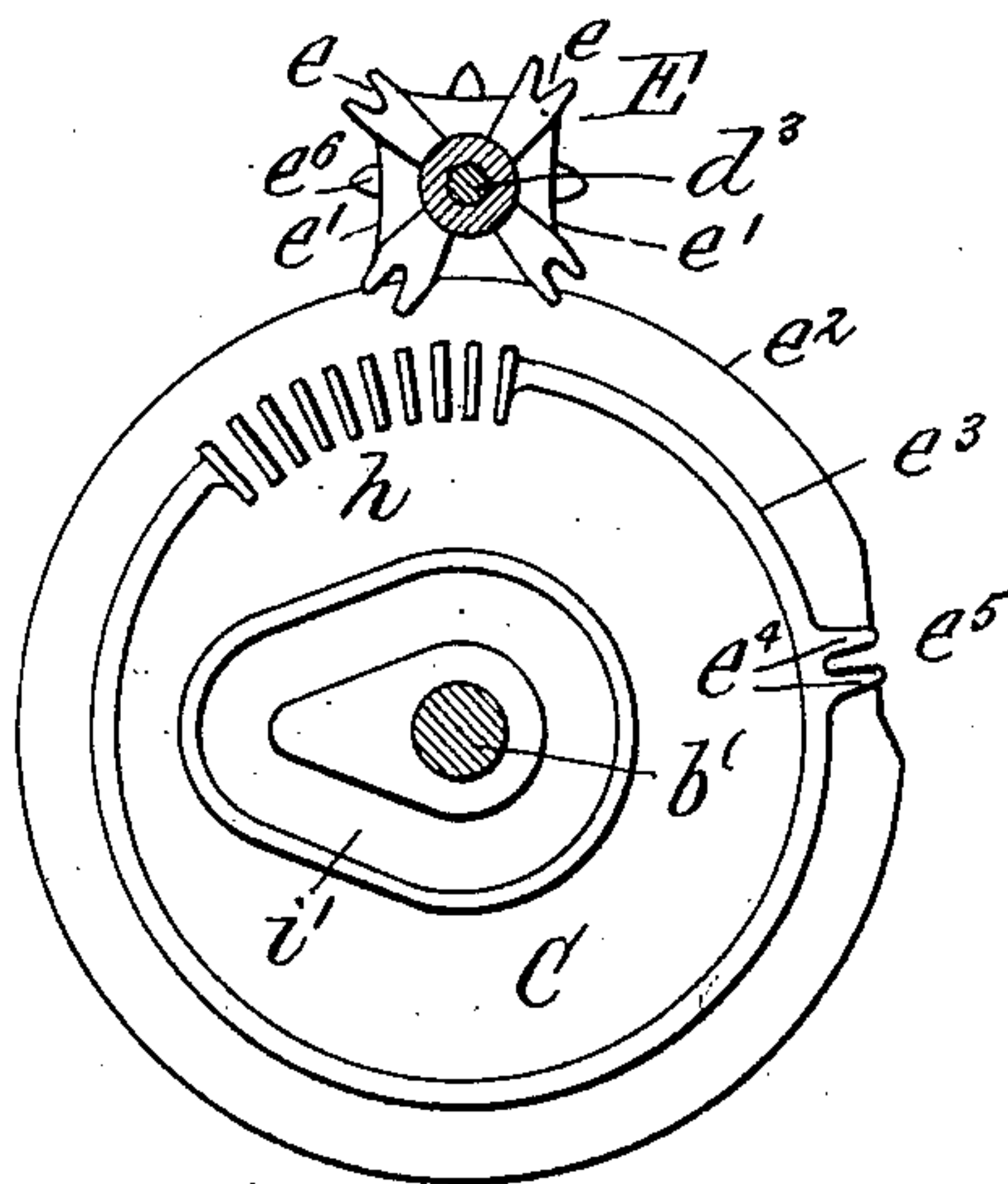
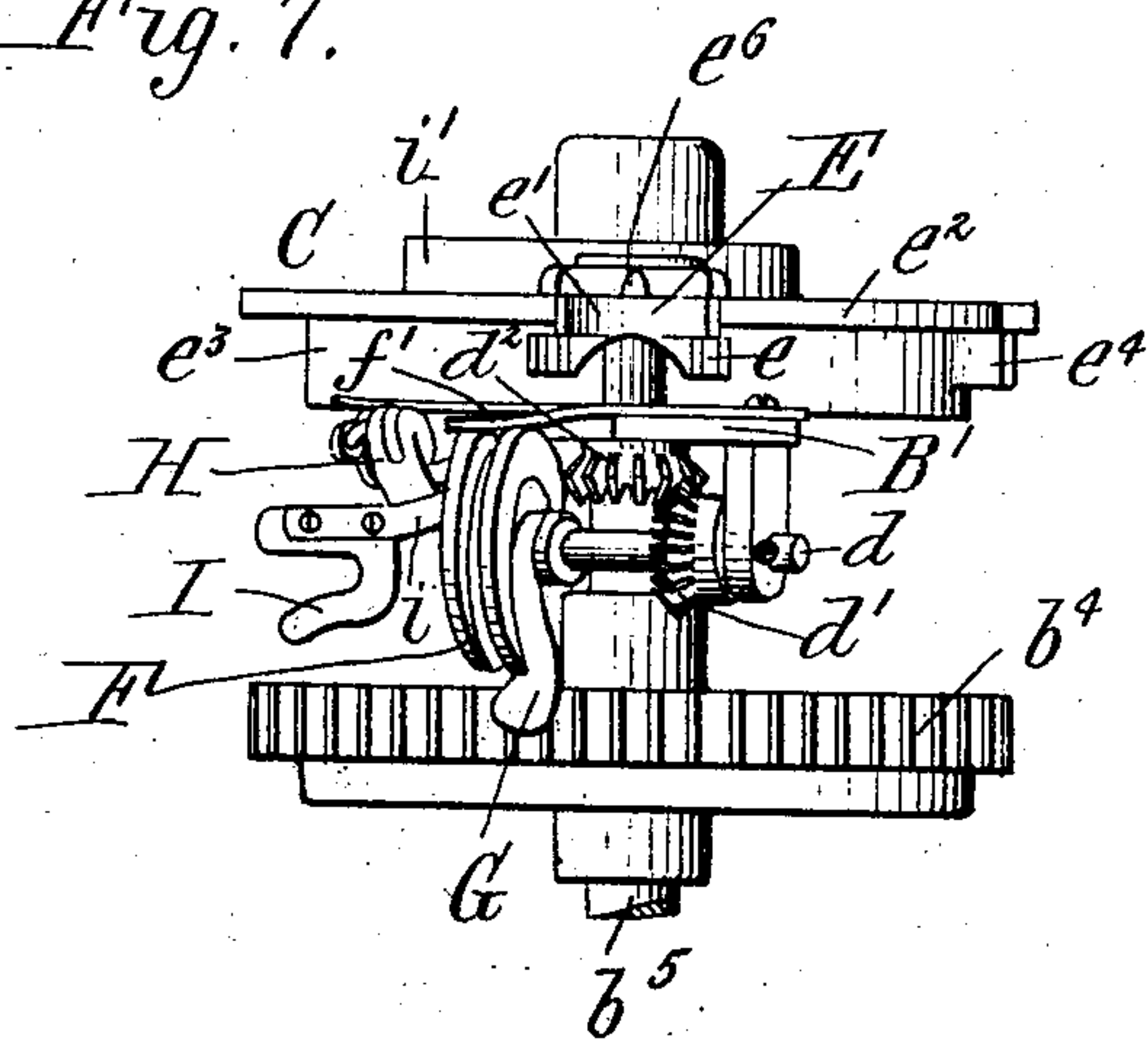


Fig. 7.



Witnesses:

E. A. Volk -

C. W. Rumer.

Henry J. Case Inventor.

By Wilhelm H. Bomer

Attorneys.

UNITED STATES PATENT OFFICE.

HENRY J. CASE, OF OWASCO, NEW YORK, ASSIGNOR TO ADRIANCE, PLATT & COMPANY, OF POUGHKEEPSIE, NEW YORK.

KNOTTER MECHANISM FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 771,532, dated October 4, 1904.

Application filed April 20, 1903. Serial No. 153,428. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. CASE, a citizen of the United States, and a resident of Owasco, in the county of Cayuga, in the State of New York, have invented new and useful Improvements in Knotter Mechanisms for Grain-Binders, of which the following is a specification.

This invention relates to that class of cord or twine binding mechanisms for grain-binders which contain a notched cord-holder disk into the notches of which the cord or twine is laid by the needle, a twine-holder or shoe which straddles the disk and which clamps and holds the twine or cord, an intermittently-rotated tying-bill or bill-hook, and other well-known accessories of such a tying mechanism.

The objects of the invention are to make a tying mechanism of this kind available for use in a low-down binder, in which class of binders the tying mechanism is arranged below the bundle or gavel of grain, to improve the means for rotating the knotter-disk intermittently, and to improve the tying mechanism in other respects.

In the accompanying drawings, consisting of two sheets, Figure 1 is a sectional elevation of a tying mechanism embodying my improvements, the section being taken at right angles to the driving-shaft. Fig. 2 is a longitudinal section in line 2-2, Fig. 1, viewed from the left in the direction of the arrow 2 in Fig. 1. Fig. 3 is an end or outside elevation of the knotter cam-wheel and connecting parts viewed from the left in Fig. 2 in the direction of the arrow. Fig. 4 is a top plan view of the removable casing or hood. Fig. 5 is a longitudinal section in line 2-2, Fig. 1, viewed from the right in the direction of the arrow 5. Fig. 6 is an inside elevation of the knotter cam-wheel and the star-wheel which is driven thereby. Fig. 7 is a top plan view of the tying mechanism.

Like letters of reference refer to like parts in the several figures.

a represents the fixed horizontal shaft or bar on which the rock-arm a' of the needle or binder arm A is mounted. This rock-arm

and the greater portion of the needle are shown in dotted lines in Fig. 1.

B represents the bridge on which the knotter mechanism is supported and which is supported at one end on the shaft a and at the opposite end on an angle-bar b , forming part of the binder-frame, or in any other suitable manner. The bridge B has an upward extension or standard B' and a downward or pendent extension B^2 .

b' represents the horizontal driving-shaft, which is journaled in the pendent extension B^2 . This shaft carries a gear-pinion b^3 , which meshes with a gear-wheel b^4 on the horizontal main knotter-shaft b^5 . The latter is journaled in a bearing b^6 on the bridge and carries on one side of this bearing the gear-wheel b^4 and on the opposite side the knotter-actuating or cam wheel C.

D represents the notched cord-holder disk arranged vertically, or nearly so, on the inner side of the standard B' , the plane of this disk standing substantially parallel with the axis of the knotter-shaft b^5 .

d represents the shaft to which the cord-holder disk is secured and which lies in a plane at right angles to the knotter-shaft. The disk-shaft d is geared by bevel-wheels d' d^2 with a horizontal actuating-shaft d^3 , which is arranged above the knotter-wheel C. The actuating-shaft d^3 is provided at its outer end with a star-wheel E, which is intermittently rotated from the periphery of the knotter cam-wheel C. The cord-holder disk has four cord-notches d^4 and is turned a quarter-revolution at a time. The star-wheel E, which drives the cord-holder disk, is so constructed that it is turned a quarter-revolution at a time and is otherwise locked against rotation. For that purpose the star-wheel E is provided with four equidistant pairs of teeth e and four intermediate concave faces e' , Figs. 6 and 7. Each of these concave faces is curved to fit the projecting peripheral face e^2 of the knotter cam-wheel C and locks the star-wheel against rotation while in contact with the face e^2 , as indicated in Fig. 6. The teeth of the star-wheel

are arranged in line with the four corners thereof and on the inner side of the peripheral face e^2 of the knotter cam-wheel C, as shown in Figs. 2 and 7, so that the concave faces e' of the star-wheel stand over the projecting peripheral face e^2 , and the teeth of the star-wheel which project beyond the four corners of the concave faces stand over the depressed peripheral face e^3 of the cam-wheel C. The latter is provided on its face e^3 with a pair of teeth e^4 , adapted to engage a pair of teeth of the star-wheel once during each revolution of the knotter cam-wheel. The projecting face e^2 of the latter is cut away in front and in rear of said teeth e^4 , as shown at e^5 in Fig. 6, so that when the teeth e^4 engage a pair of teeth of the star-wheel the lower concave face of the star-wheel is released and the star-wheel is free to be rotated a quarter-turn. As soon as this movement has been performed the projecting peripheral face of the cam-wheel C engages against the next following concave face of the star-wheel and locks the latter. In this manner the cord-holder disk is positively rotated intermittently from the knotter cam-wheel C and securely held against rotation in the intervals. The star-wheel is preferably provided with teeth e^6 , which project on the outer side of the knotter cam-wheel C and in connection with the teeth e limit the lateral play of the star-wheel with reference to the knotter cam-wheel.

F represents the cord or twine holder or shoe which straddles the upper portion of the cord-holder disk and is attached at its lower end by a pivot f to the bridge-standard B'. The shoe or holder is pressed against the disk by a spring f' , Figs. 2 and 3, as usual.

G represents a clearer which is arranged opposite the face of the cord-holder disk below the ends of the twine-holder or shoe, and which removes the twine remnants from the notches of the disk as the latter rotates past the clearer. As shown in the drawings, this clearer has the form of an inclined plate or bridge, which is secured at its upper end to the upper portion of the standard B' and extends below the ends of the holder or shoe and terminates over the gear-wheel b^4 , Figs. 1, 2, 5, and 7. In knotters of this general type, usually called the "Appleby" knotter, a piece of twine about an inch and a quarter long remains in the knotter-disk after the knot has been tied and the twine has been cut. When the cord-holder disk is arranged horizontally and above the bundle or gavel of grain, as it is often arranged in elevator-binders, the grain in sweeping past the disk pulls the remnant of twine out of the notches of the disk, and so keeps the latter clear. When the knotter is arranged below the bundle, this clearing action does not take place, and the twine remnants would accumulate and

clog the knotter. This is prevented by the clearer, which removes the twine remnant from the disk. After the twine remnants leave the disk they slide down over the inclined clearer and fall upon the gear-wheel b^4 , which by its rotation carries them off and drops them on the ground.

The knotter mechanism is provided with the usual appurtenances of this type of knotter, such as the bill-hook or tying-bill H, which is rotated intermittently by a segmental gear-face h on the cam-wheel C and bevel-wheels h' , Figs. 1 and 6, and a stripper-arm I, carrying a cutter i , Figs. 1, 3, and 7, and operated by a cam i' on the wheel C in the usual way.

K, Figs. 1 and 4, represents the removable casing or hood, which may be employed for covering the mechanism. This casing is supported on the fixed shaft a and the frame-bar b or in any other suitable manner and is provided with a slot k , Fig. 4, through which the needle plays.

L represents the usual spring detent-pawl, pivoted to the casing K, and l the stop or projection on the outer side of the knotter cam-wheel C, whereby backward rotation of the latter is prevented in a well-known manner.

I claim as my invention—

1. The combination of a horizontal main knotter-shaft, a gear-wheel secured to the same, an upright notched cord-holder disk arranged at one side of said gear-wheel parallel with said knotter-shaft, a twine-holder extending over the upper portion of the cord-holder disk, and an oblique clearer arranged at one side of said disk and having its lower end arranged below the end of said twine-holder, substantially as set forth.

2. The combination of a horizontal main knotter-shaft, a gear-wheel secured to the same, an upright notched cord-holder disk arranged at one side of said gear-wheel, a twine-holder extending over part of said disk, and an inclined clearer below the twine-holder, extending downwardly therefrom and terminating over said gear-wheel, substantially as set forth.

3. The combination of a knotter-actuating wheel having a circular peripheral face provided with a recessed portion and a pair of teeth in the latter, a star-wheel having concave faces which interlock with said peripheral face and provided at each salient portion between two concave faces with a pair of teeth adapted to mesh with the teeth on said actuating-wheel, a cord-holder disk, and gearing connecting said star-wheel with said disk, substantially as set forth.

4. The combination of a knotter-actuating wheel having a circular peripheral face provided with a recessed portion and a pair of teeth arranged in the latter on one side of

said wheel, a star-wheel having concave faces which interlock with said peripheral face and provided at each salient portion with a pair of teeth adapted to mesh with the teeth on one
5 side of said actuating-wheel, teeth arranged at the recessed portions of the star-wheel and bearing against the opposite side of said actuating-wheel, a cord-holder disk, and gear-

ing connecting said star-wheel with said disk, substantially as set forth. 10

Witness my hand this 14th day of April, 1903.

HENRY J. CASE.

Witnesses:

LLOYD JOHNSON,
C. E. GUFFIN.