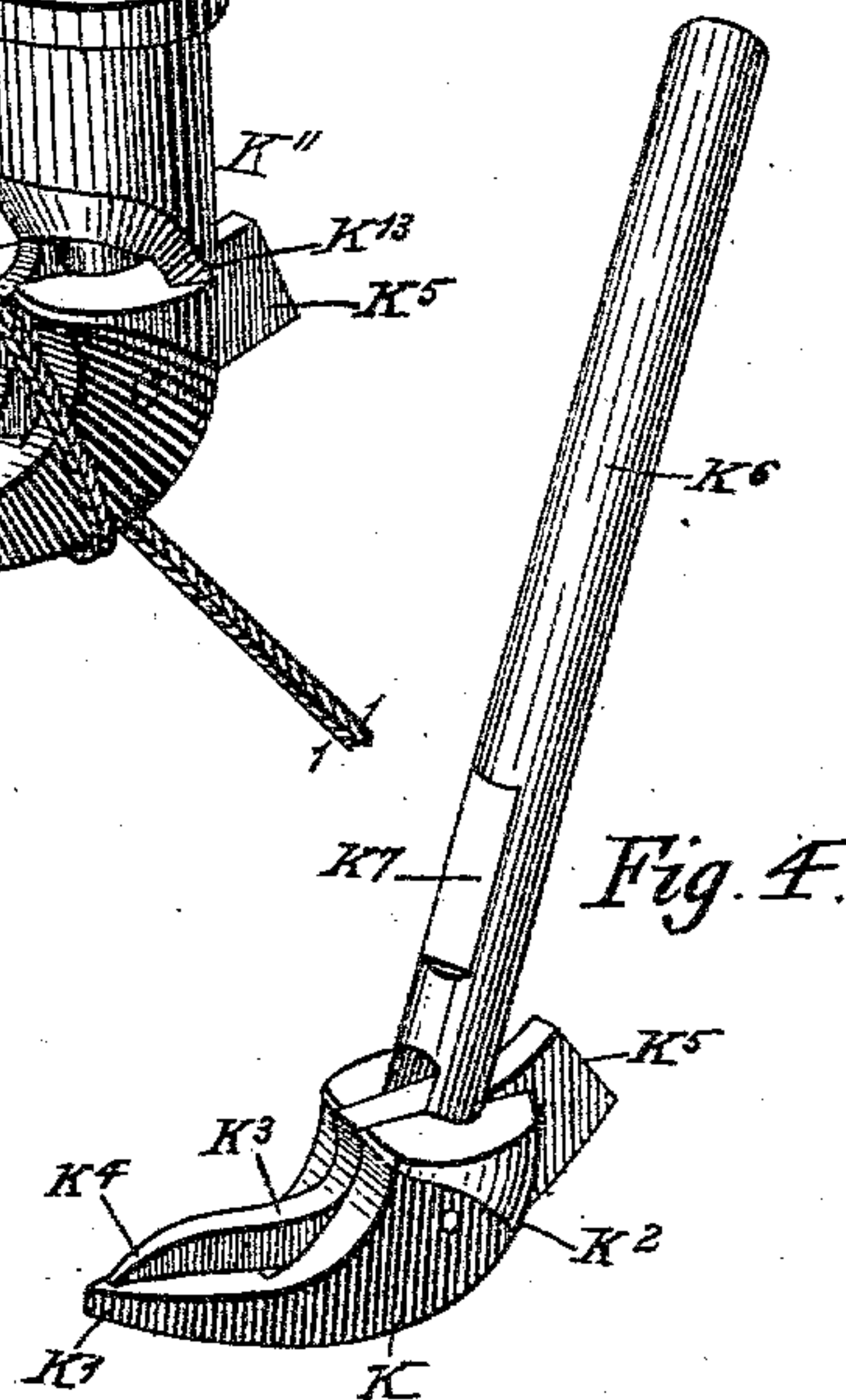
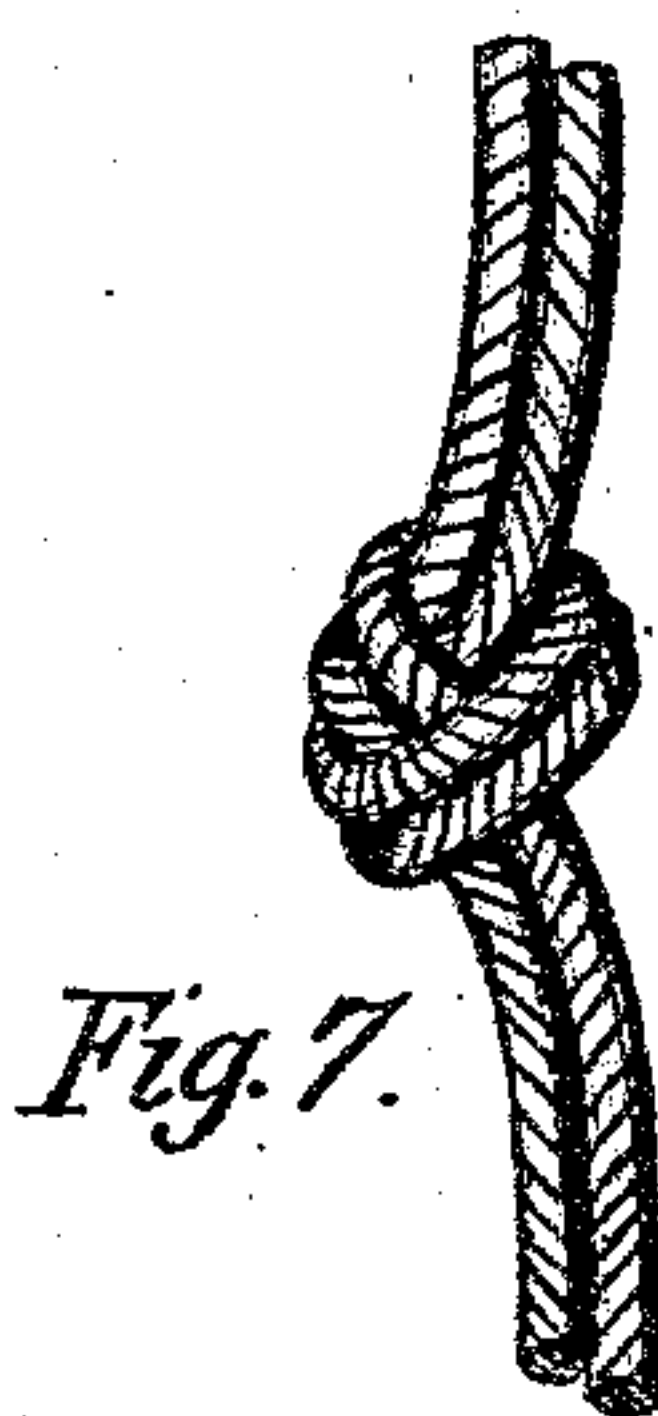
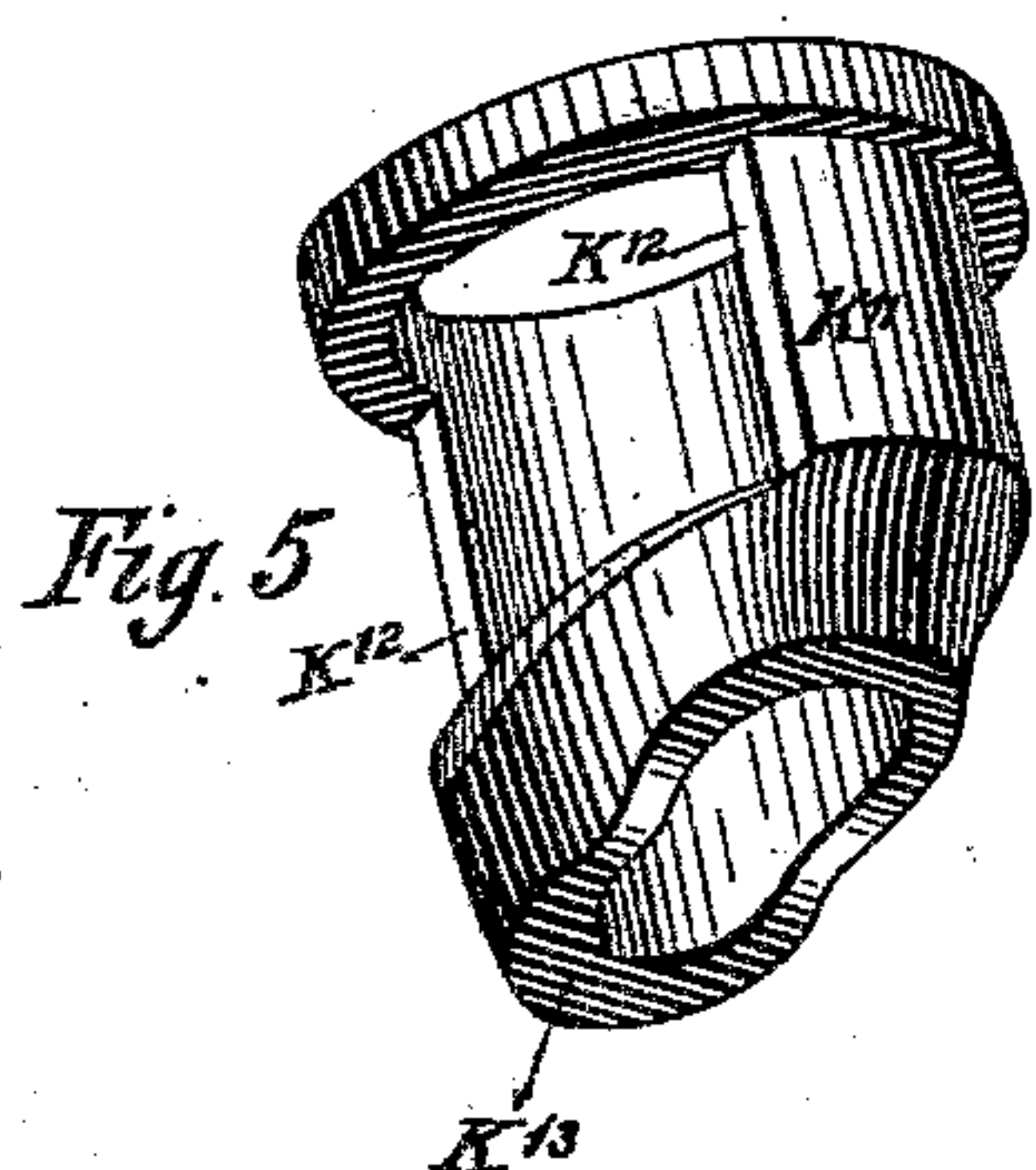
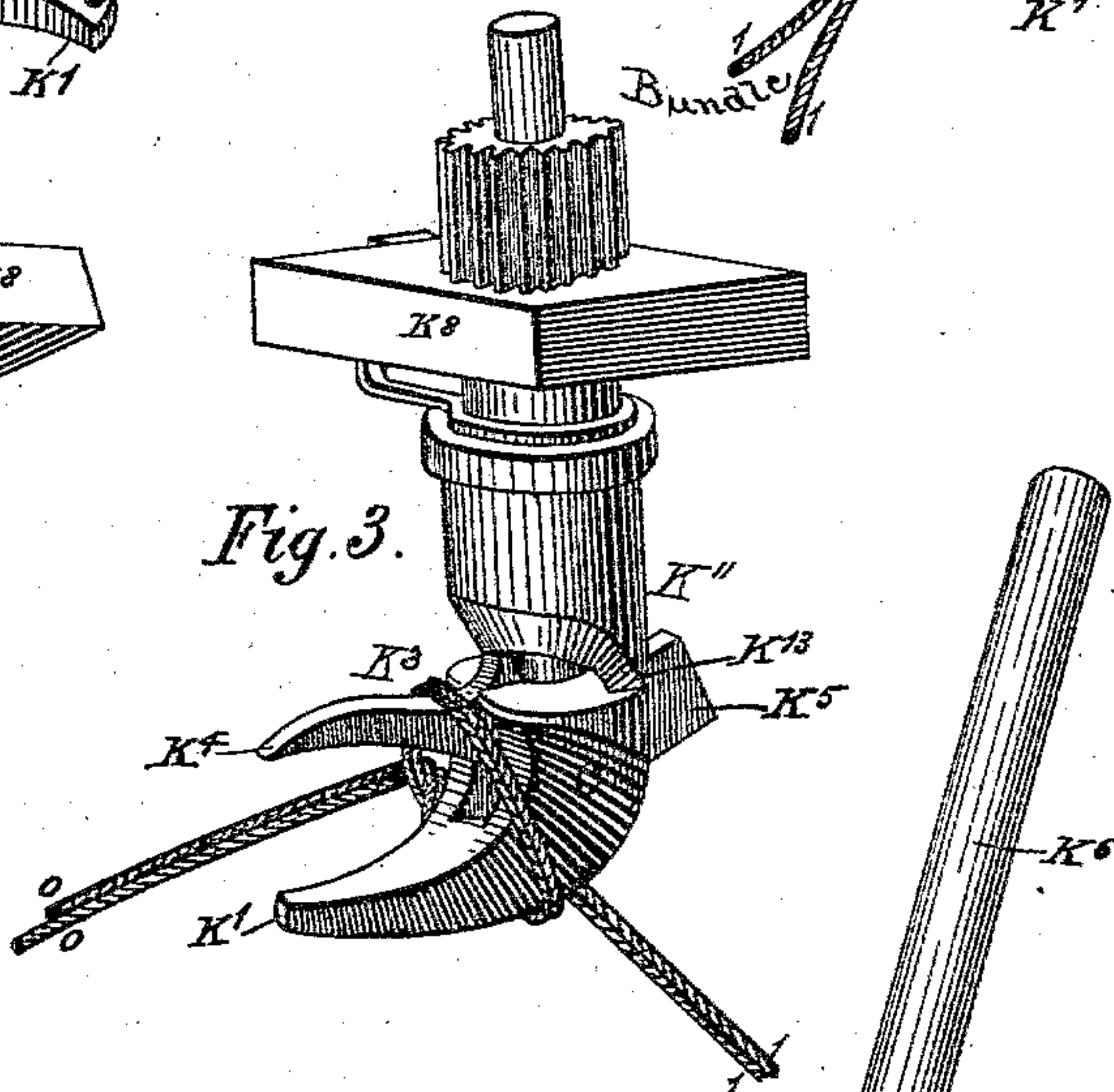
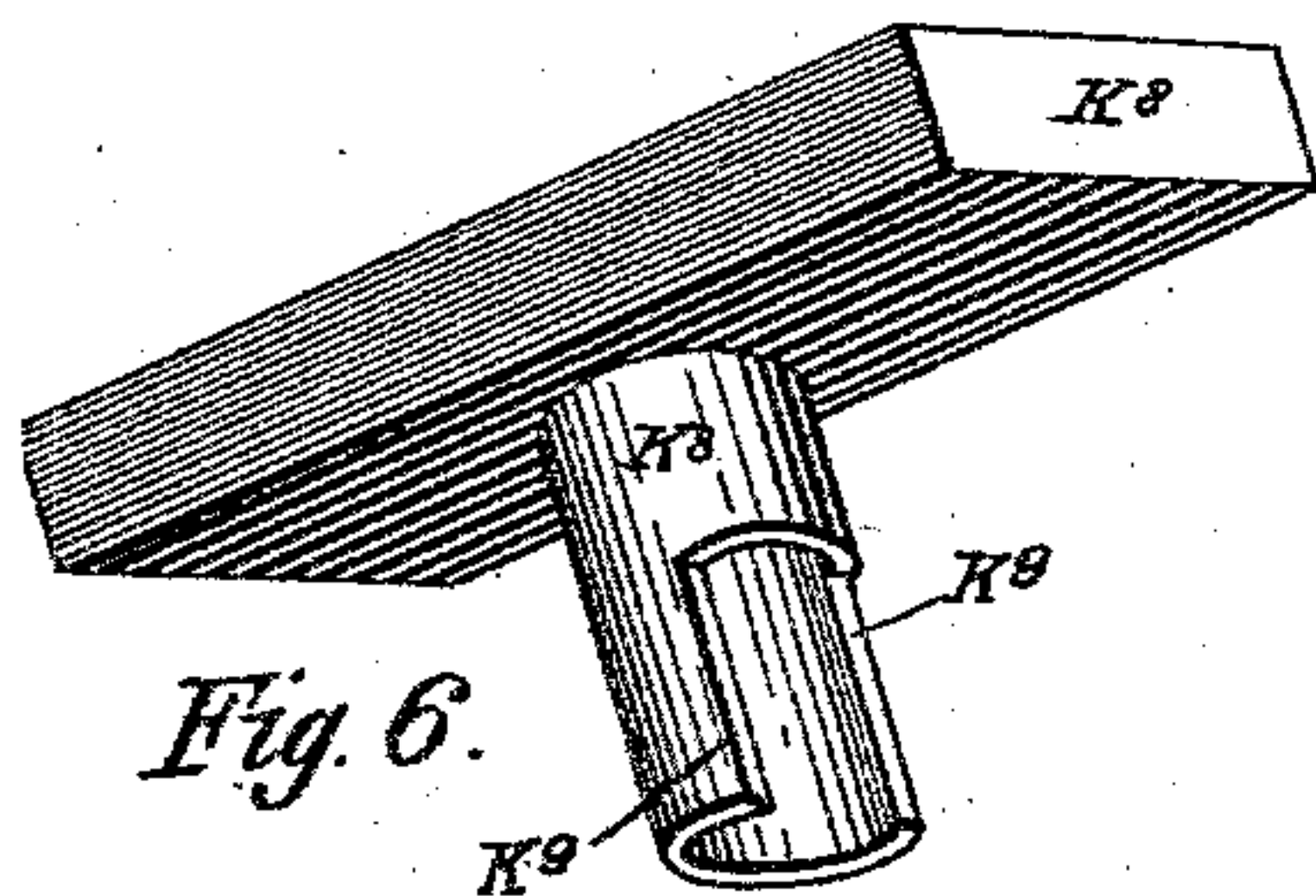
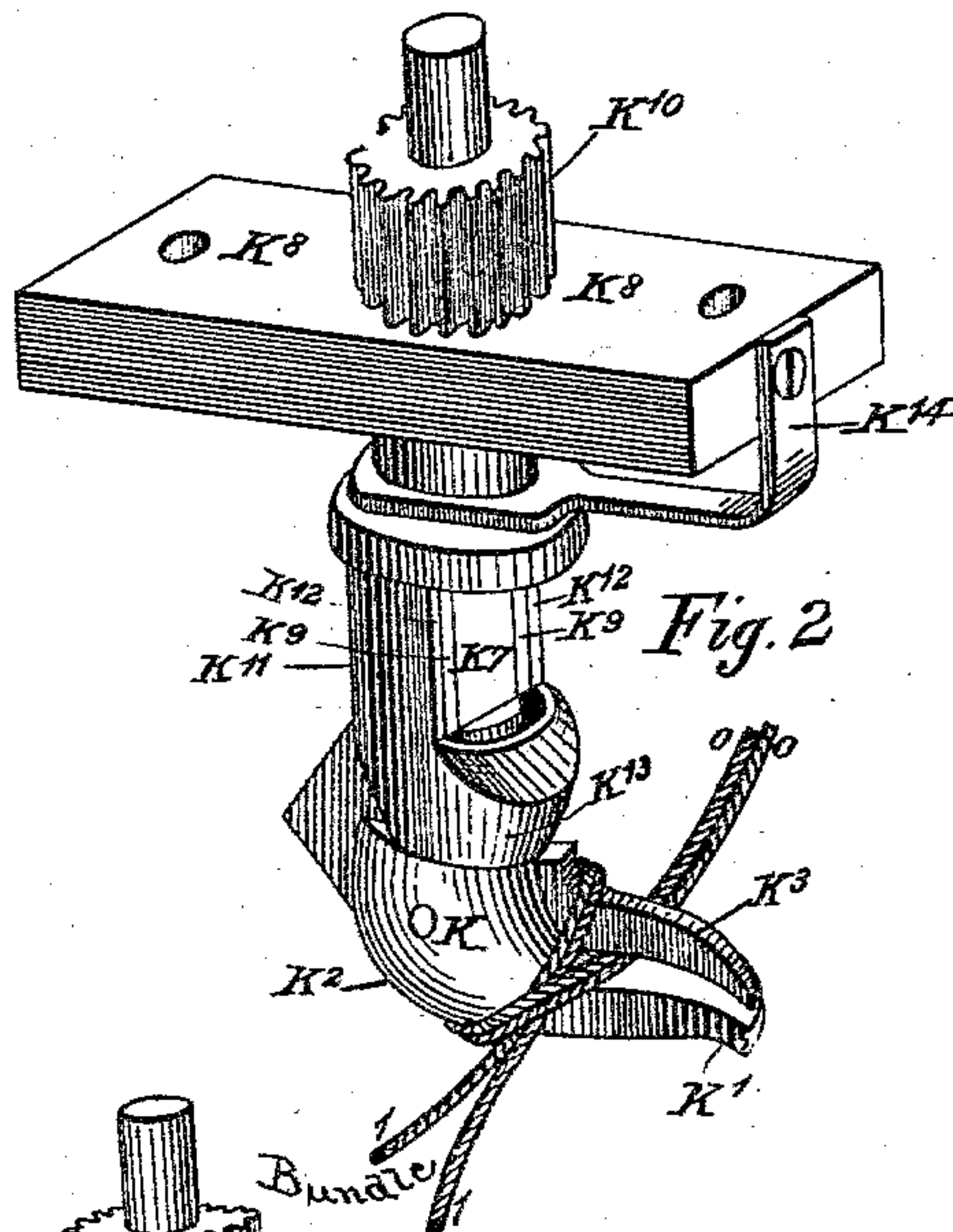
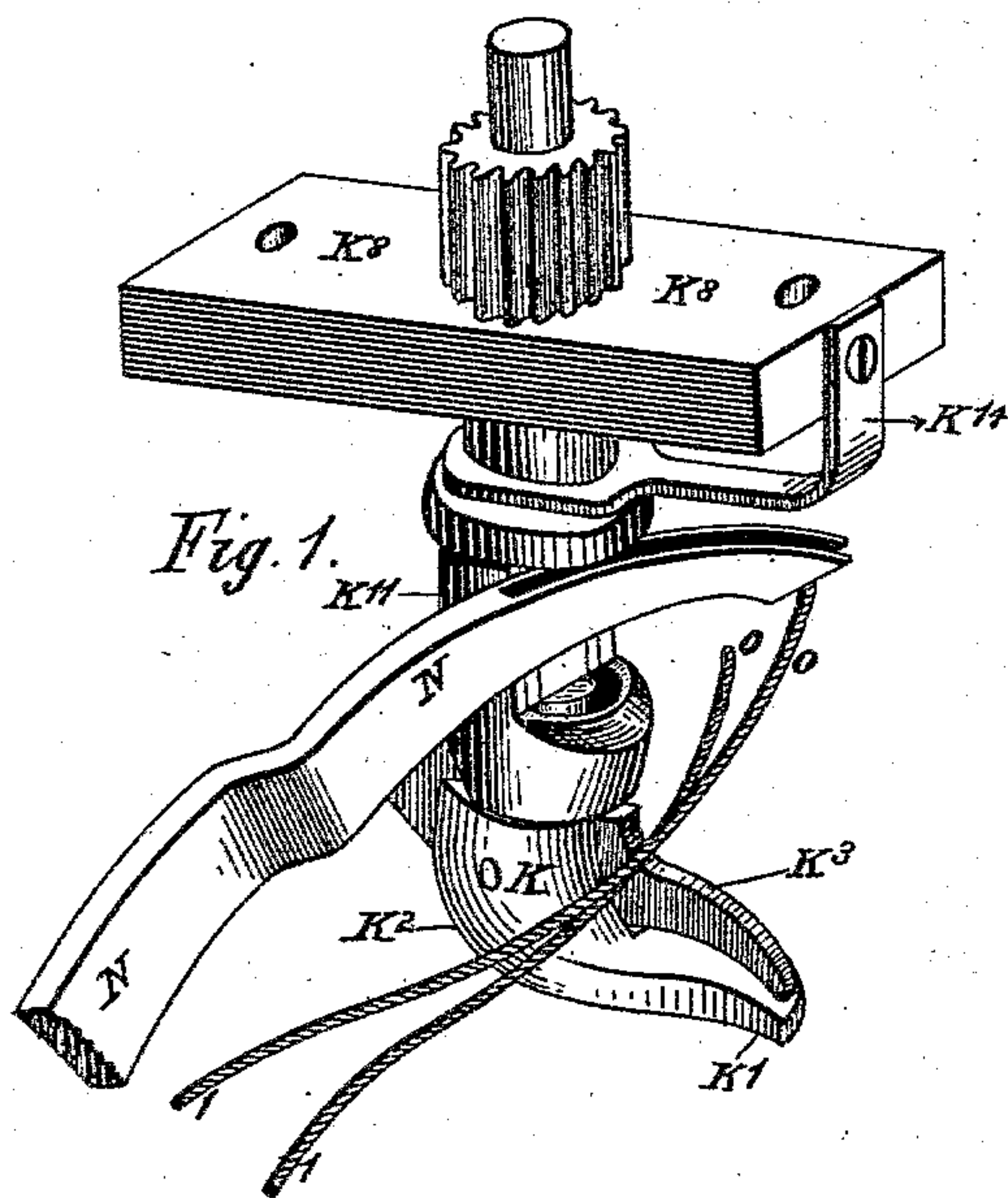


(No Model.)

H. D. W. BAILEY.
GRAIN BINDER.

No. 283,456.

Patented Aug. 21, 1883.



Witnesses.

Byron J. Douds
Fred W. Bond

Inventor.

Henry D. W. Bailey

UNITED STATES PATENT OFFICE.

HENRY D. W. BAILEY, OF CANTON, OHIO.

GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 283,456, dated August 21, 1883.

Application filed February 3, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY D. W. BAILEY, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Grain-Binder, of which the following is a specification.

The objects of my improvements are, first, to insure the laying of the cord by the binder-arm upon and close to the center of the knotter-jaws; second, to provide a single device for operating the movable jaw; third, to facilitate the movements of the knotter mechanism. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the knotter. Fig. 2 is a similar view when the loop of the knot is formed. Fig. 3 is a perspective view of the same when the movable jaw is open. Fig. 4 is a perspective view of the shaft and jaws detached. Fig. 5 is a perspective view of the jaw-operating cam-sleeve detached. Fig. 6 is a perspective view of the case or box with its depending bushing, and Fig. 7 is the knot.

Similar letters refer to similar parts throughout the several views.

The knotter mechanism consists of a fixed jaw, k , having a point, k' , which is curved or bent, (although not enough to interfere with the stripping of the loop from off the knotter-jaws,) acting somewhat as a hook to keep the cords from sliding over the points when the knotter commences its revolution. This fixed jaw depends from a shaft, k^6 , which has one side cut away (see k^7 , Fig. 4,) to permit the binder-arm to pass close to its center. Attached to the upper end of this shaft is a pinion, k^{10} , which meshes with the machinery of other parts of the grain-binder. The fixed jaw referred to has a slot through which extends a movable jaw, k^3 , which is pivoted to the same, as shown in Fig. 4. This movable jaw is both opened and closed by a sleeve, k^{11} , (see Fig. 5,) having a projecting cam-part, k^{13} , on its lower edge. This sleeve has one side cut away (see k^{12} , Fig. 5,) to permit the binder-arm to pass close to the center of the knotter-shaft. Bearing upon the upper surface of the sleeve is a plate-spring, k^{14} , one end of

which is pivoted to the box or case k^8 , (see Figs. 1, 2, and 3,) or some other convenient point, and the opposite end surrounds a bushing which depends from the said box or case, which incloses and supports the knotter-shaft previously referred to. This bushing has one side cut away (see Fig. 6, k^9) to permit the binder-arm to pass close to the center of the knotter-shaft. The end of this spring, which encircles the bushing, is pivoted loosely to the upper surface of the cam-sleeve to prevent a rotary, and yet to permit a slight vertical, motion of the cam-sleeve. The function of this spring is to hold said cam-sleeve against the knotter-jaws and to relieve its rigidity.

The object of the vertical motion of the cam-sleeve is to adjust the pressure of the movable jaw upon cords of different thicknesses or different accidental thicknesses in the same cord, thus holding the same with equal tenacity; also, enabling the knotter to revolve smoothly, as well as to operate with equal facility under varying conditions. The knotter is attached to the binder-frame by means of the case or box k^8 .

The binder-arm has a side curve, the direction of which is from the knotter, as shown in Fig. 1, and is again gradually curved toward the knotter, so as to bring the point in line with the main part of the binder-arm. These curves are sufficient to and are used for clearing the knotter-shaft during its revolution.

When the binder-arm comes forward, carrying the cord that extends around the sheaf, its point passes close to the center of the knotter-shaft by means of the way formed by the cut-away sides heretofore described, whereby it is enabled to lay the cord upon and close to the center of the knotter-jaws (see Fig. 1) by the side of the cord previously laid there by the binder-arm during its retreat, thereby insuring the passage of the points of the knotter-jaws over the cords (which extend from the knotter to the sheaf) as the knotter revolves to form the loop of the knot, this being a result not heretofore attained except by the use of complicated machinery. The extremity of the binder-arm next passes forward to the cord-holder, in which the cord is to be secured. The side curve of the binder-arm, being at this

point of time opposite the knotter, leaves the knotter-shaft clear, in order that it may revolve without coming in contact with the same. The knotter-shaft now commences to revolve, carrying with it the knotter-jaws, and their points pass over the cords 1 1, while the cords o o (which extend from the knotter to the cord-holder) pass under the heel of the fixed jaw. As the knotter-shaft revolves yet further the projecting cam part k^3 of the sleeve engages with the heel k^5 of the movable jaw, depressing it, and thereby elevating the point k^4 . (See Fig. 3.) As the knotter-shaft revolves yet further the point of the movable jaw passes over and the point of the fixed jaw passes under the cords o o. (See Fig. 3.) As the knotter-shaft revolves yet further to complete its revolution and to fully receive the cords o o the heel of the movable jaw passes out from under the projecting part of the sleeve, and immediately the projecting part engages with the forward part of the movable jaw, forcing it downward upon the cords and holding the same against the upper surface of the fixed jaw, (see Fig. 2,) thereby insuring a firm knot as the cords are severed and the loop drawn over the severed ends and stripped from off the knotter by other machinery of the grain-binder. As the binder-arm retreats to gather a new sheaf it lays the cord upon and close to the center of the knotter-jaws, and upon its return lays the cord upon the said jaws in the manner heretofore described.

I am aware that prior to my invention knotter-jaws have been operated in various ways, and that the cord has been guided or drawn upon the knotter-jaws by different methods; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The sleeve k^{11} , having a projecting cam part, k^{13} , adapted to elevate and depress the movable jaw k^3 , substantially in the manner and for the purpose set forth.

2. The spring k^{14} , encircling the bushing and bearing upon the jaw-operating cam-sleeve, substantially as shown and for the purpose specified.

3. The knotter-shaft cut away on one side to permit the binder-arm to pass close to the center of the shaft, so as to insure the laying of the cord upon the knotter-jaws by the binder-arm.

4. The cutaway knotter-shaft, combined with the inclosing-jaw, operating cam-sleeve, said sleeve being cut away on one side to permit the binder-arm to lay the cord close to the center of the jaws.

5. The combination of the cutaway knotter-shaft, its inclosing cut-away jaw, operating cam-sleeve, and the bushing, also cut away on one side, as described, all as and for the purpose set forth.

6. The combination of the knotter and the side-curved binder-arm, the knotter-shaft being cut away on one side, and its inclosing-bushing and jaw-operating cam-sleeve each cut away on one side, whereby the laying of the cord on the knotter by the binder-arm is insured.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HENRY D. W. BAILEY.

Witnesses:

A. R. SPENCER,
B. J. DOUDS.