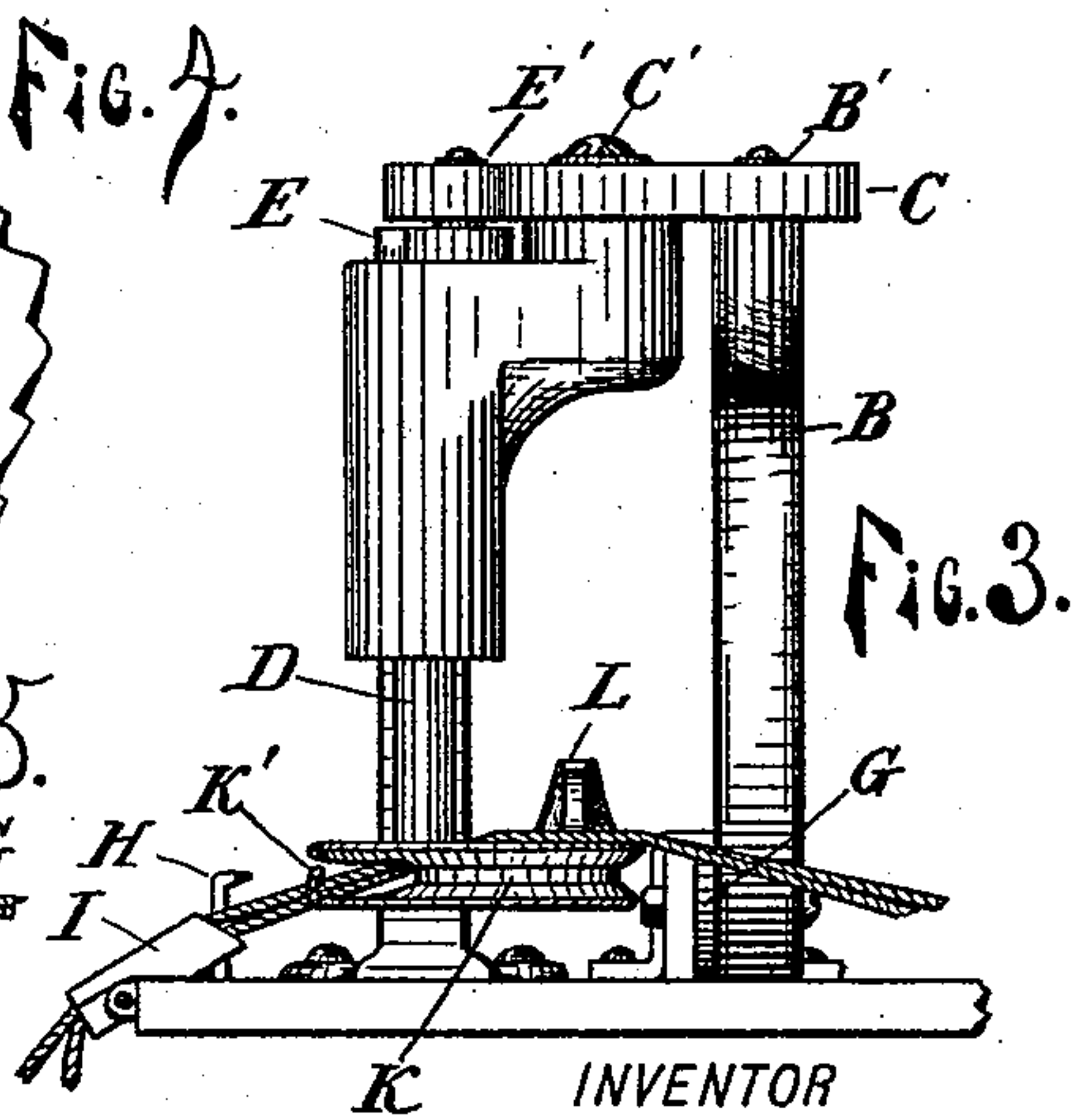
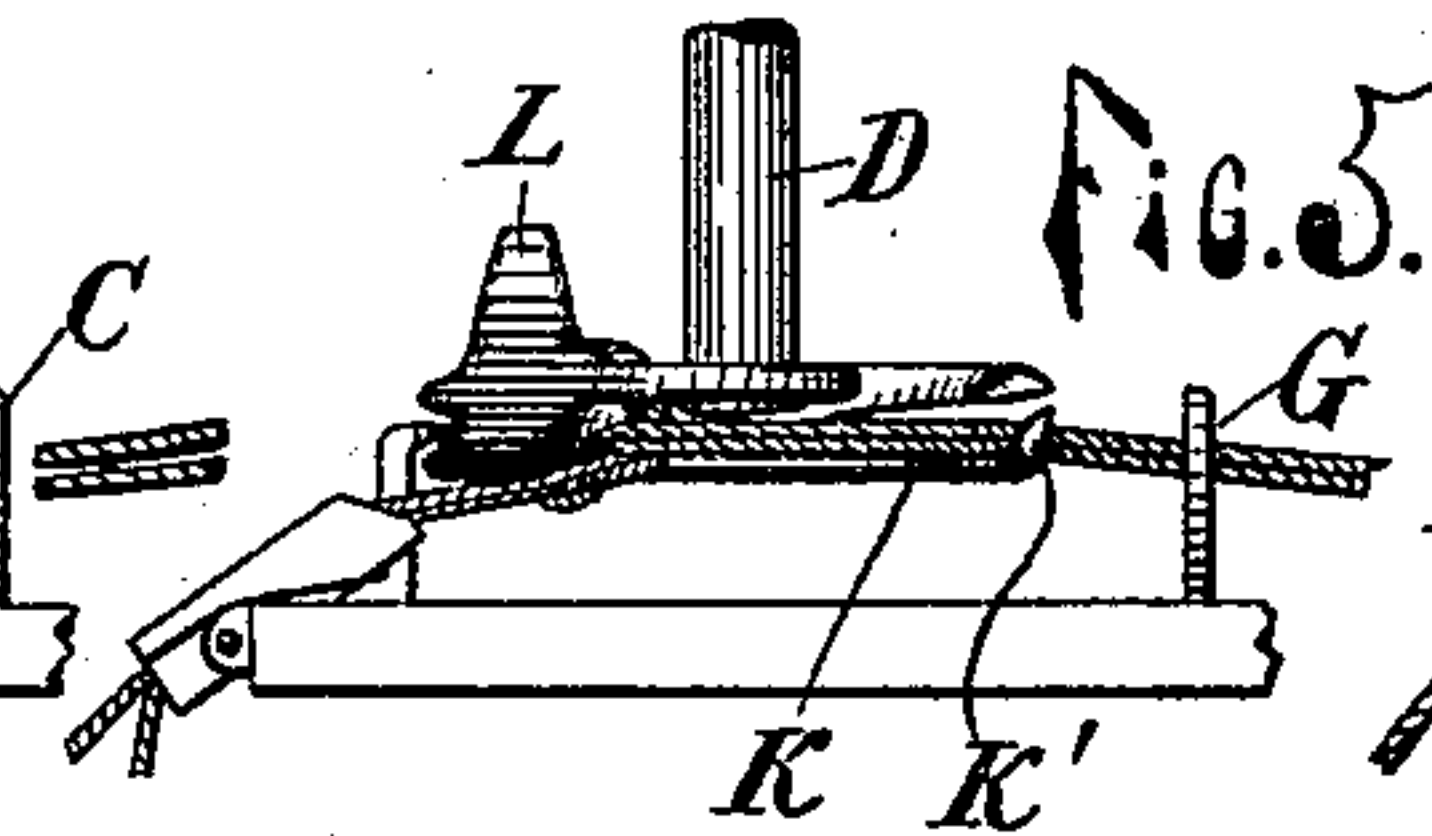
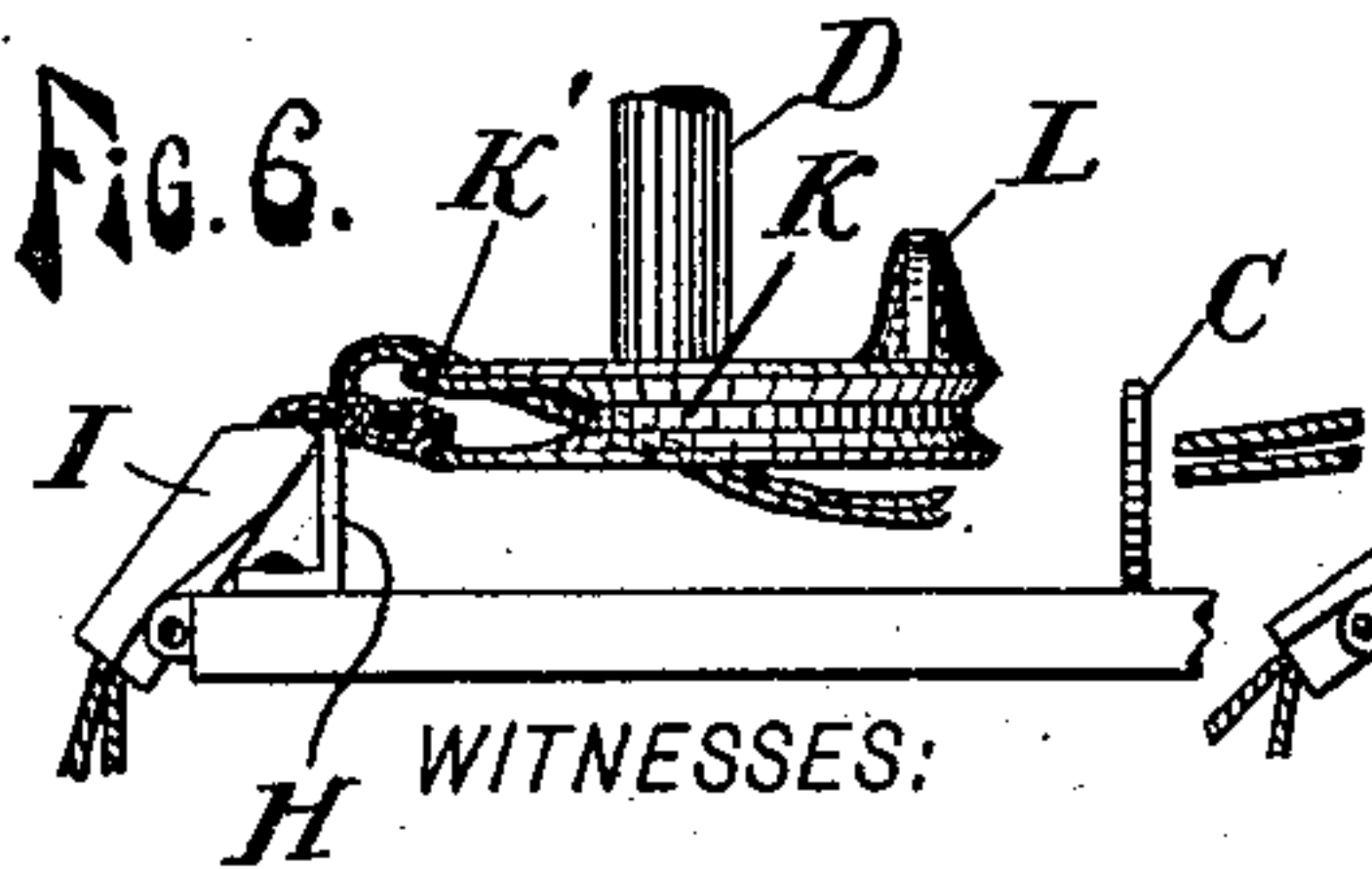
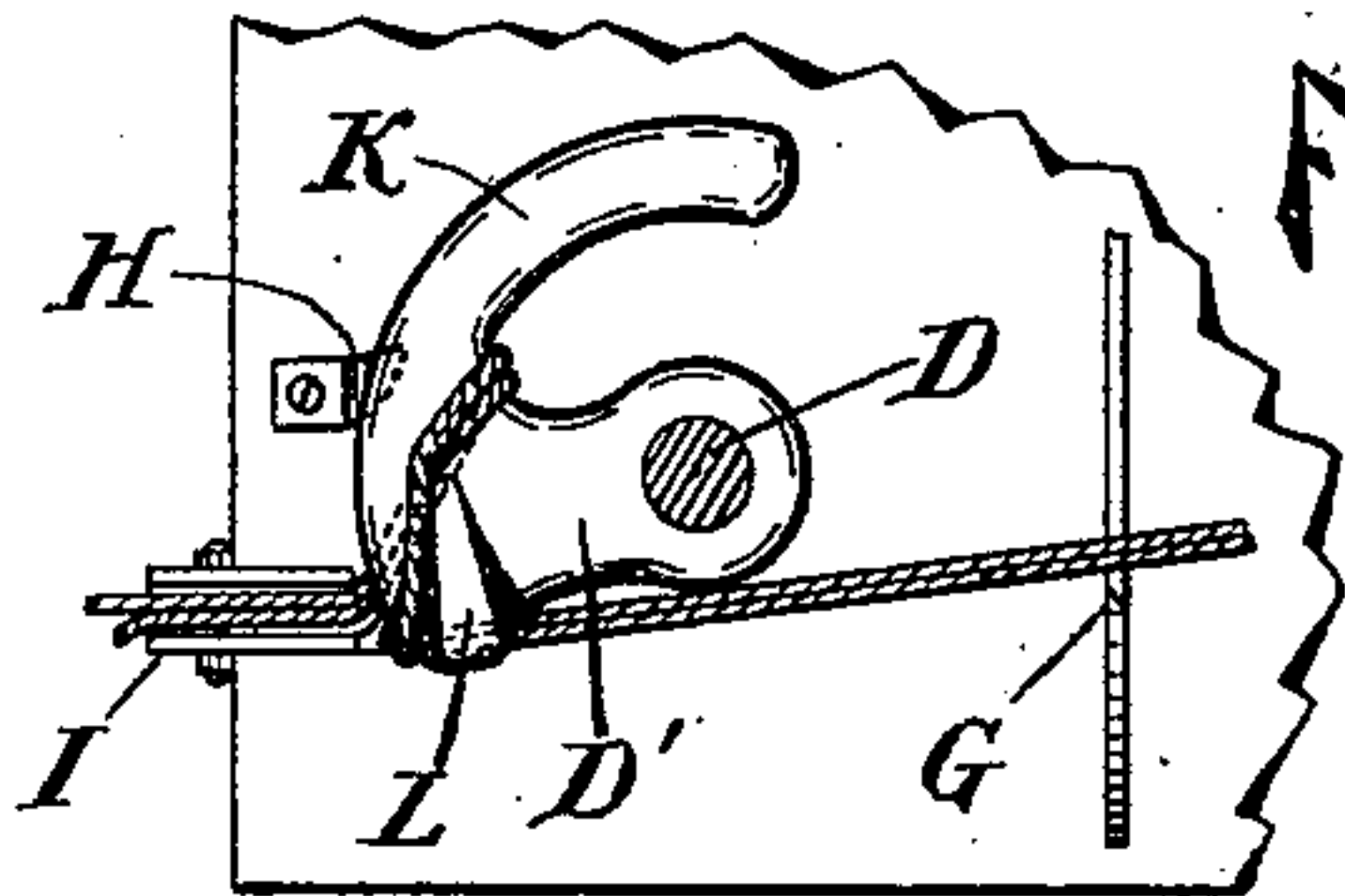
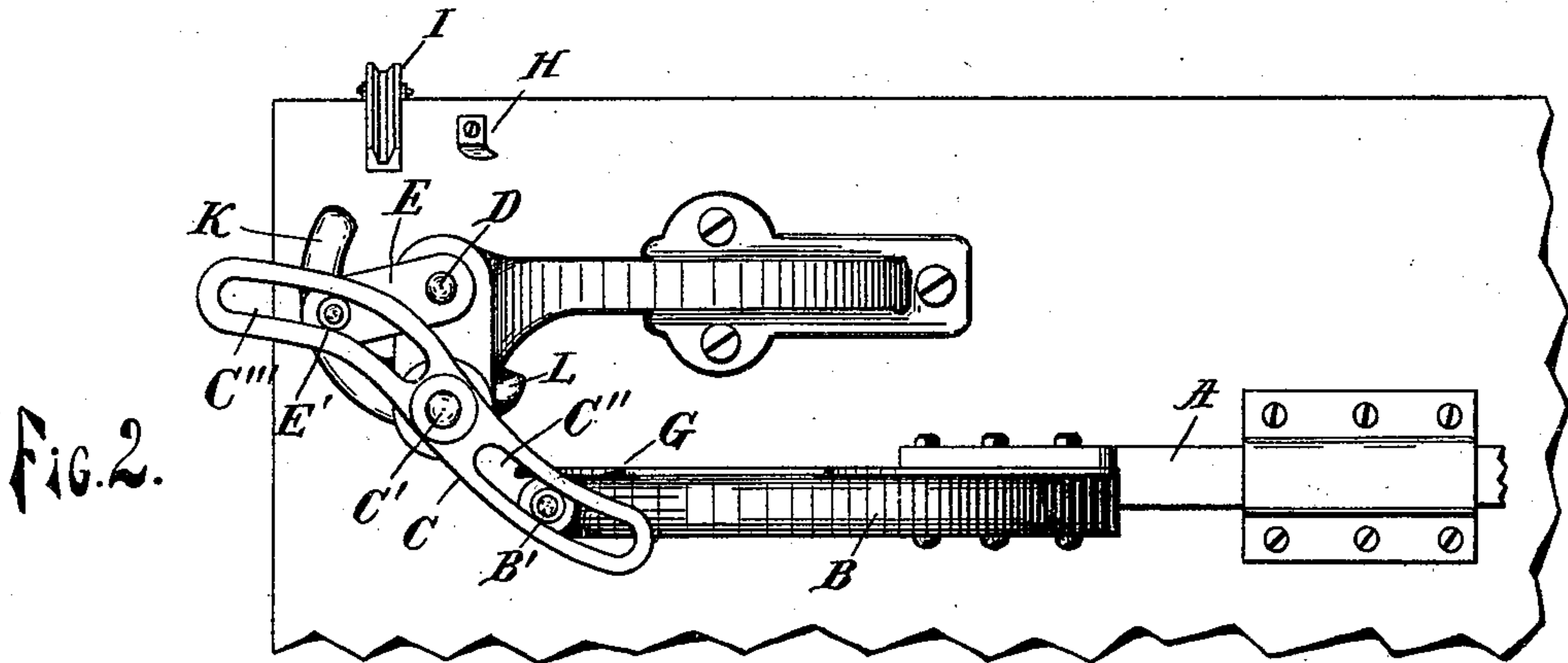
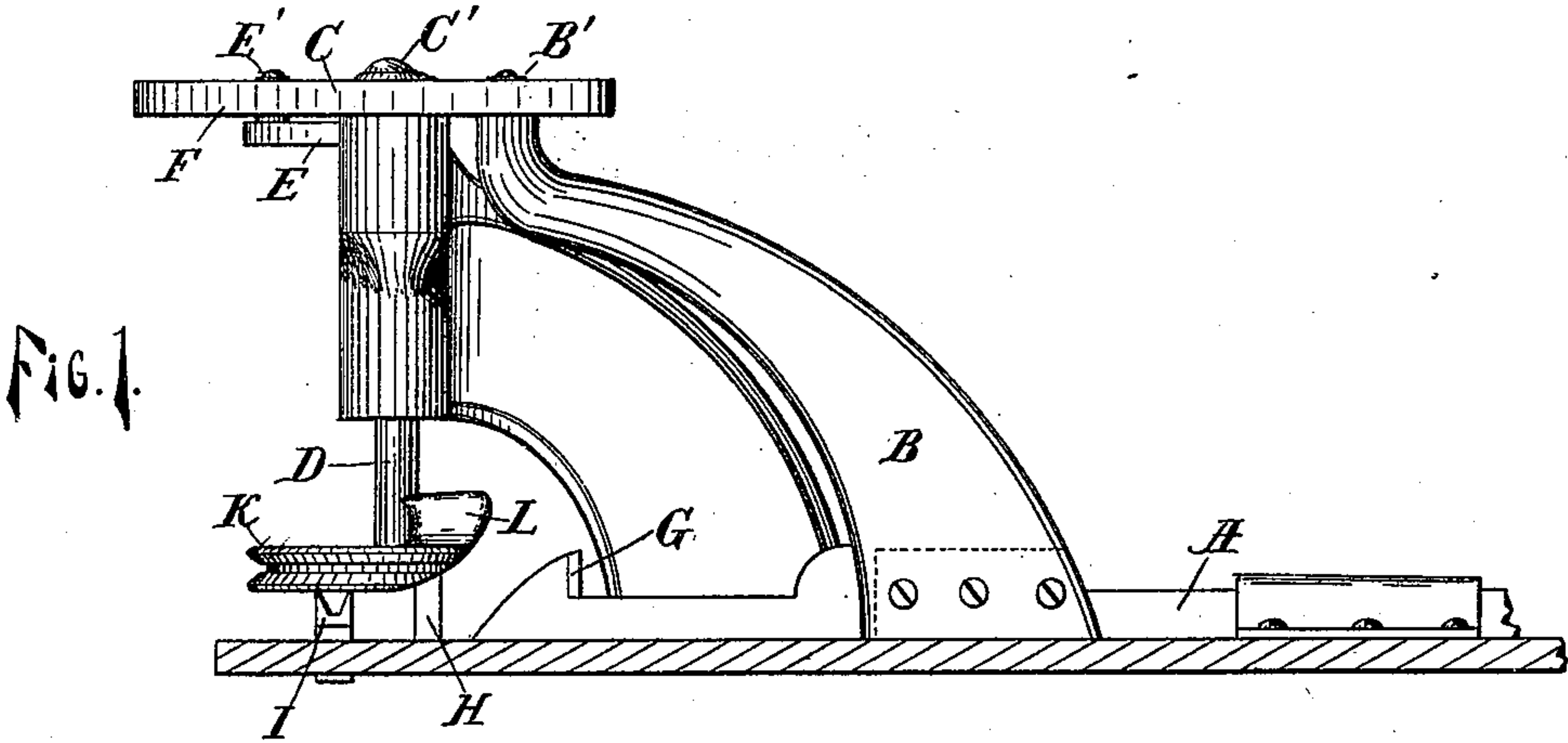


(No Model.)

J. F. STEWARD.
KNOTTER FOR HARVESTING MACHINES.

No. 519,395.

Patented May 8, 1894.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JOHN F. STEWARD, OF LAKE ODESSA, MICHIGAN.

KNOTTER FOR HARVESTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 519,395, dated May 8, 1894.

Application filed April 8, 1893. Serial No. 469,625. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. STEWARD, a citizen of the United States, residing at Lake Odessa, in the county of Ionia and State of Michigan, have invented certain new and useful Improvements in Knotters for Harvesting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in knotters for harvesting machines, and its object is to provide the same with certain new and useful features, hereinafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a device embodying my invention; Fig. 2 a plan view of the same; Fig. 3 an end view of the same; and Figs. 4, 5 and 6, details showing the various positions of the parts at different stages of the operation.

Like letters refer to like parts in all of the figures.

A is the operating slide which is given a longitudinal reciprocating motion at proper intervals by any convenient means.

B is an arm extending upward from and moving with the slide A, which arm is provided at its upper end with a roll B' engaging and traversing a slot C'' in the lever C, which lever is pivoted near its middle at C', to any suitable fixed support, and is oppositely extended and provided with a suitable slot C''', which is engaged and traversed by a roll E' journaled on the end of a crank E, attached to the upper end of a vertical shaft D journaled in suitable bearings, and having at its lower end an arm D', said arm being provided at one side of its outer end with an upwardly projecting lug L, and at the other side with a segmental bill K. The side of the lug L toward the bill K is concave to engage and hold the twine, and the opposite side of said lug overhangs and is convex, being inclined downward and toward the arm D' to permit the twine to slip downward and pass beneath said arm. The outer side of the bill is grooved, to allow the end of the hook on the post H to pass beneath the twine and its end

is divided or forked, having an upper and lower part between which the twine passes, the lower part terminating in an inwardly turned hook to retain said twine.

H is a fixed post terminating at the top in a laterally turned hook, which traverses the groove in the edge of the bill and which hook is inclined to let the twine pass on the forward stroke of the bill, and to retain the twine on the backward stroke of the same.

G is a twine cutter attached to the slide A and reciprocating with the same, having an inclined forward end to raise and pass under the twine, on the forward stroke, and a vertical cutting edge to engage and sever the twine on the backward stroke.

I is a trip lever, having a groove in its upper surface to receive the twine, and pivoted to turn in a vertical plane and in suitable relation to the bill, to operate as hereinafter described. The reciprocating linear movement of the bar A, imparts a reciprocating rotary movement to the shaft D and parts attached by means of the pivoted lever C, and crank E; the roll B' traverses the slot C'' and as it advances in a right line, turns the lever C about one third of a revolution about the pivot C'; the other end of said lever having the slot C''' swings over the shaft D, and turns the crank E through about two thirds of a revolution, and on the return stroke of the bar A the movements are reversed.

Before the described movements begin the twine is by any convenient mechanism, brought around the bundle, and the two parts held side by side in a line engaging the groove in the trip lever I, and extending diagonally upward through the space between the arm D' and bill K, and thence across the upper surface of said bill near the lug L, and thence across the path of the cutter G. As the forward stroke proceeds, the bill passes over the twine at the side next the trip lever I, and the twine is engaged by the concave side of the lug L and partially wound about the same, when said twine engages the inclined outer side of said lug, and slips downward and passes beneath the arm and end of the shaft, forming a loop or half hitch about the heel of the bill as shown in Fig. 5, the divided end of the bill now embraces the twine, which is retained by the hook K'. The return stroke now

occurs, which carries the bight of the twine formed by the hook K' back to a point adjacent to the trip lever I. In the mean time the half-hitch, or loop about the heel of the bill has passed the post H, which post now engages the same and holds it, thus enabling the bill to be withdrawn from the loop, carrying the bight of the twine through the same, thus forming the knot as shown in Fig. 6. In the mean time the cutter G has advanced and receded and at the time the knot is fully formed severs the twine; this releases the strain on the twine, and permits the weight and downward pressure of the bundle to throw up the inner end of the trip lever I and release the bight from the hook K'.

What I claim is—

1. In a knotter in combination with an arm pivoted near one end, and means for reciprocally rotating said arm about said pivot, a concavo-convex lug on said arm, a curved bill opposite said lug, a hook on the end of said bill and a stationary hook traversing said bill, substantially as described.

2. In a knotter, a shaft having an arm at its end, a lug at one side of said arm, having a concave and convex side, a bill projecting from the opposite side of said arm, a divided end to said bill, an inwardly turned hook in the opening of said divided end, a hook adapted to traverse said bill, and means for reciprocally rotating said shaft, substantially as described.

3. In combination with a reciprocally rotating shaft, an arm, a concavo-convex lug, a bill having a groove, and a divided end, and an inwardly projecting hook in said divided end,

a stationary hook traversing said groove, and a pivoted and grooved trip lever adjacent to the path of said bill, substantially as described.

4. In a knotter, a shaft having the moving parts of the knotting mechanism attached, a reciprocating bar carrying an arm, a pivoted lever engaged at one side by said arm, a crank attached to said shaft and engaged by the other side of said lever, whereby a reciprocal rotary motion is imparted to said shaft, substantially as described.

5. In a knotter, a shaft having the moving parts of a knotter attached, a crank on said shaft, having a roll at its movable end, a reciprocating bar, having a roll attached a lever having slots engaging said rolls, and an intermediate pivot, and a twine cutter attached to said bar, having an inclined outer end and a cutting edge at an angle to its line of motion, substantially as described.

6. In a knotter a reciprocating bar, having a knife and arm attached, a shaft having a crank and arm attached at its respective ends and intermediately journaled, a lever having slots at each end respectively engaging said arm and crank, and an intermediate fixed pivot, a lug and bill on the arm on said shaft, a hook on the end of said bill, and a fixed hook near the path of said bill, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. STEWARD.

Witnesses:

LEWIS E. FLANDERS,
LUTHER V. MOULTON.