

(No Model.)

G. D. SECOR.

DOFFING ATTACHMENT FOR SPINNING MULES.

No. 475,808.

Patented May 31, 1892.

FIG. 1.

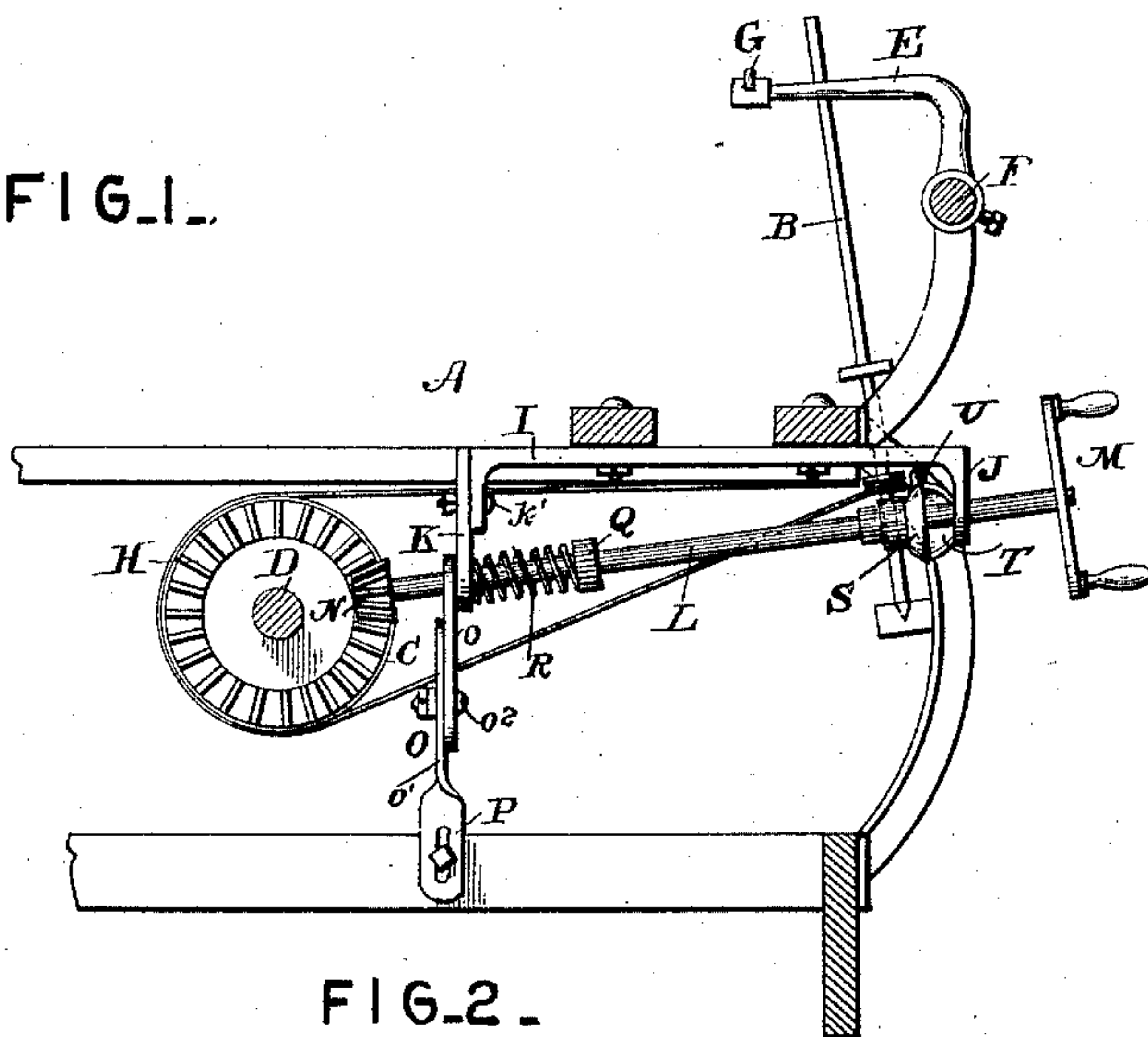


FIG. 2.

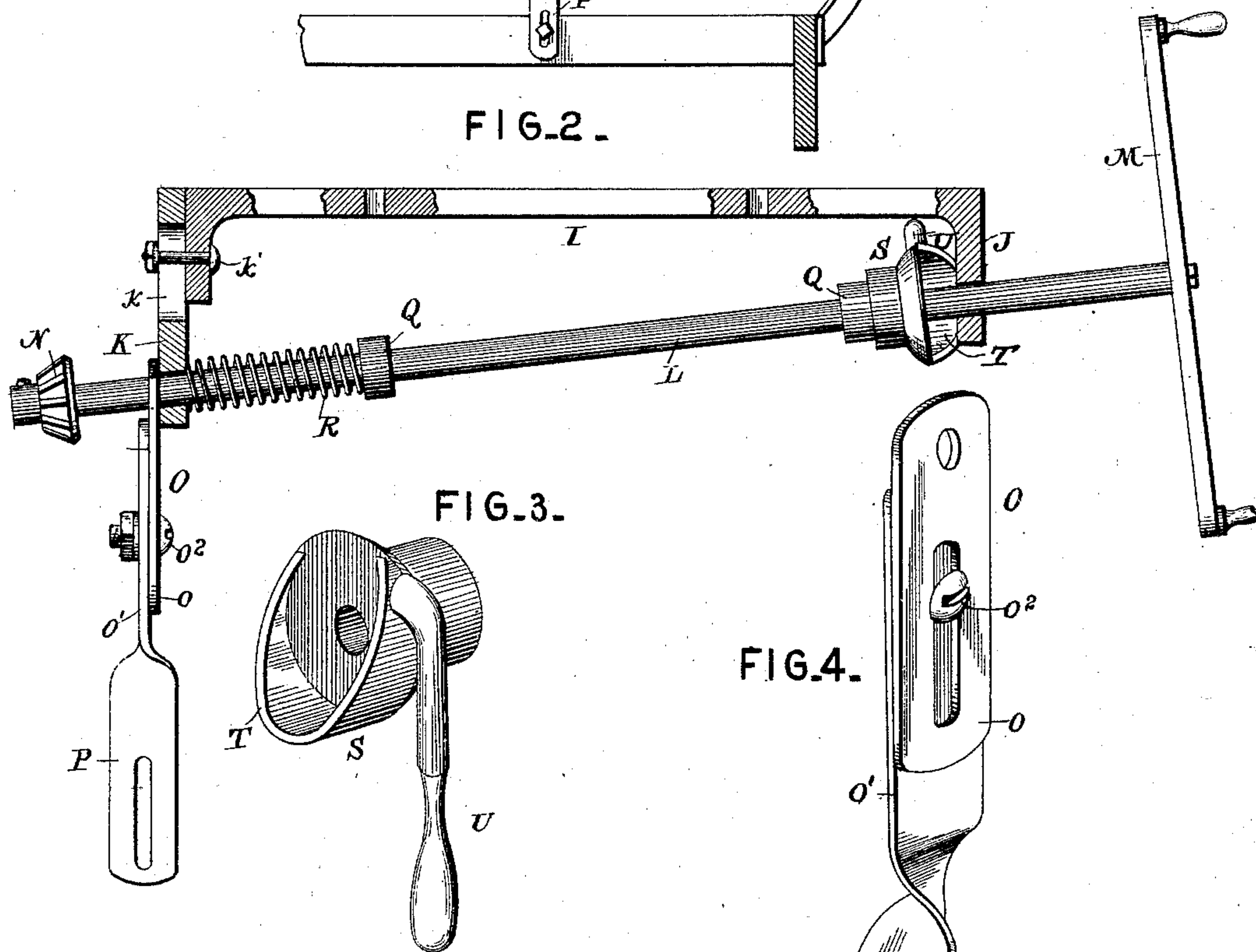


FIG. 3.

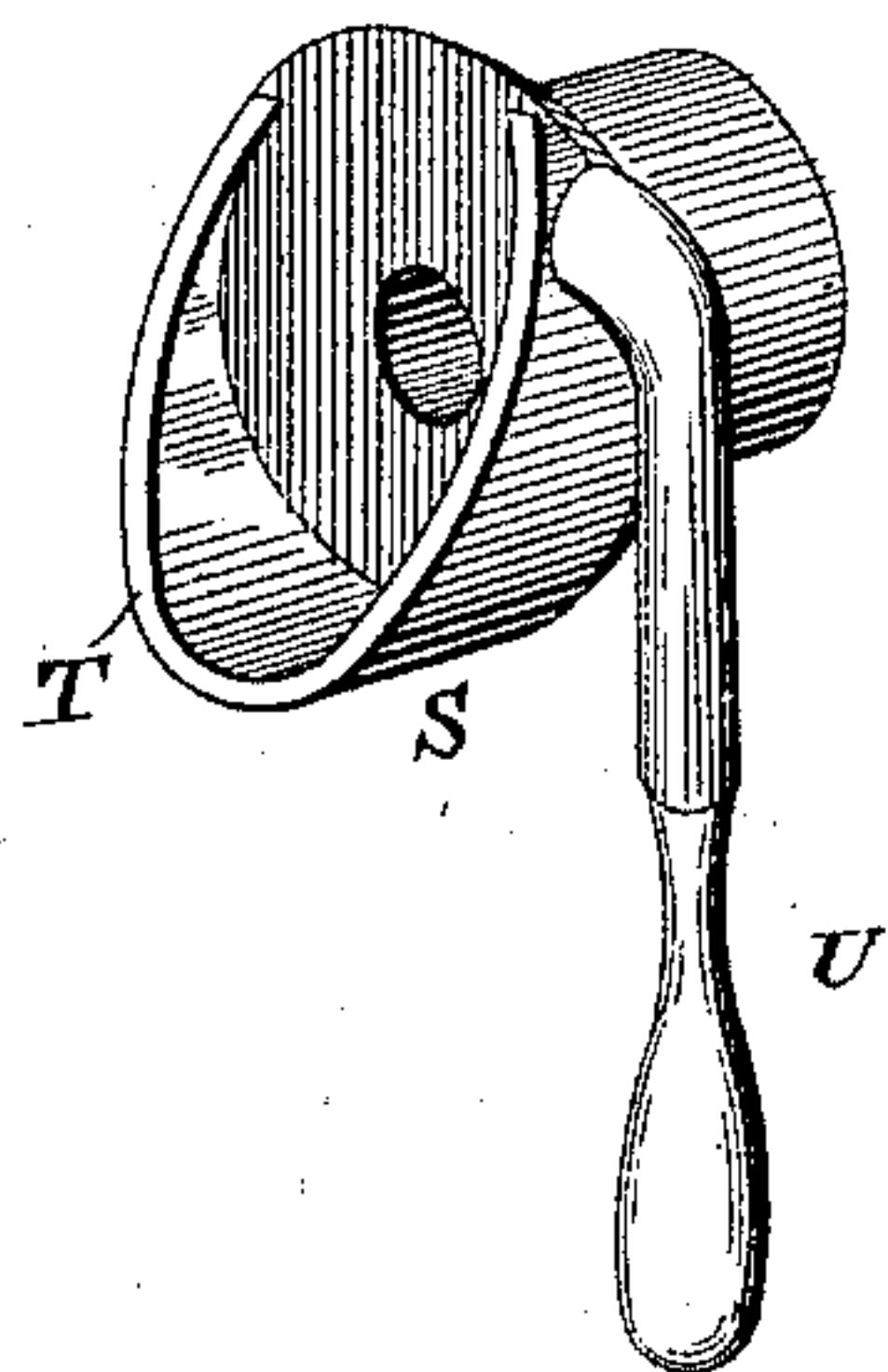
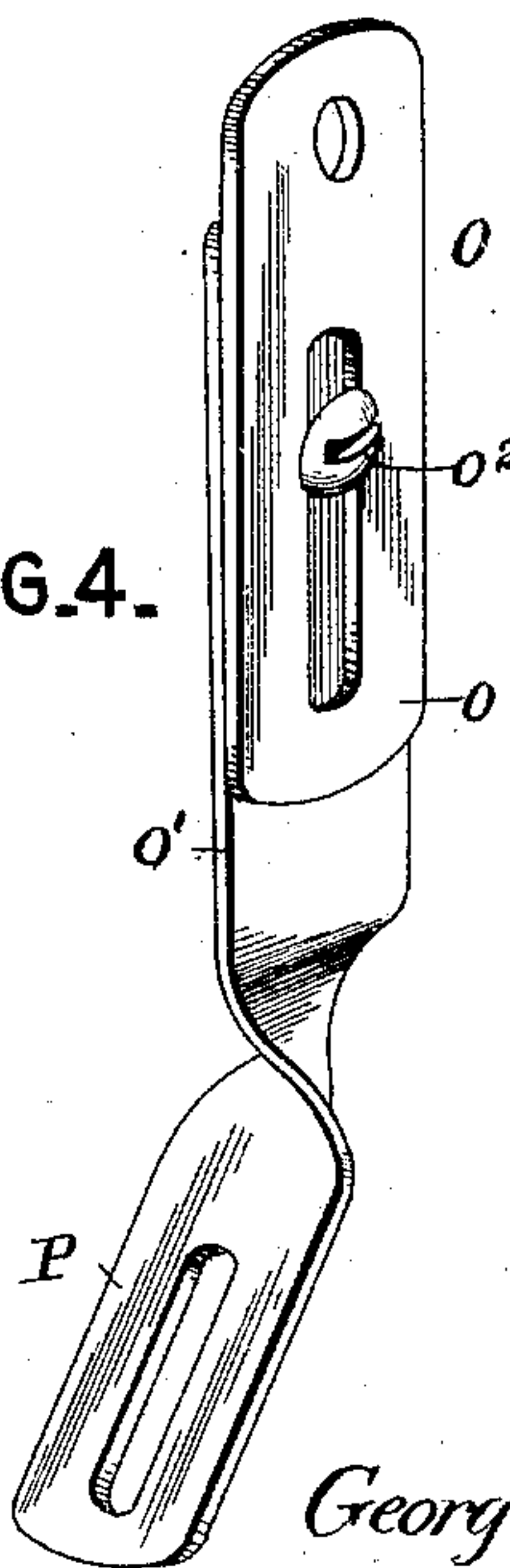


FIG. 4.



Witnesses

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DOFFING ATTACHMENT FOR SPINNING-MULES.

SPECIFICATION forming part of Letters Patent No. 475,808, dated May 31, 1892.

Application filed January 18, 1892. Serial No. 418,491. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. SECOR, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented a new and useful Doffing Attachment for Spinning-Mules, of which the following is a specification.

This invention relates to doffing attachments for spinning mules or jacks; and it has for its object to provide an improved automatic attachment of this character which can be readily connected with any ordinary mule and which will greatly facilitate the doffing of the cops.

It is the primary object to provide a device simple in construction and easy in manipulation, whereby the spindle-driving drum or cylinder may be easily turned by a boy or girl for winding the yarn on the spindles when the full cops are removed and for starting the yarn on the cops when placed on the spindle, and thus avoid the hard pull and effort required to pull on the race belt or band, which is connected with the spindle-driving drum or cylinder in nearly all the mules of ordinary use.

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

In the accompanying drawings, Figure 1 is a vertical transverse sectional view of a mule-carriage provided with a doffing attachment constructed in accordance with my invention. Fig. 2 is a longitudinal sectional view of the attachment, showing the cam raised in the position for throwing the bevel-pinion in gear with the driving-drum gear. Fig. 3 is a detail in perspective of the cam-casting. Fig. 4 is a similar view of the adjustable brace.

Referring to the accompanying drawings, A represents a mule-carriage of ordinary construction and carrying a series of cop-spindles B, journaled in the carriage and connected by the ordinary cords or belts with the spindle-driving drum C, journaled longitudinally in the carriage and mounted upon the shaft D. As illustrated in the drawings, the section is taken through a mule-carriage at one end of the spindle-driving drum, as will be apparent to those skilled in the art.

Connected with the mule A are the ordinary faller-arms E, carried upon the ordinary oscillating shaft F and controlling the longitudinal faller-wires G, which depress the yarn below the bottom of the bobbins when the same are full and are raised when the same are empty in the ordinary manner. A large bevel gear-wheel H is keyed upon the drum-shaft D and is designed to be engaged by my improved doffing attachment when the carriage is stationary and the cops are to be removed and replaced by the empty bobbins.

Secured to the under side of the carriage at a suitable point is the doffing attachment bracket I, provided at its front end with the short depending arm J and the inner vertically-adjustable bearing-arm K, provided with a slot *k*, working over the securing or adjusting bolt *k'*, passing therethrough, and the inner end of the bracket I. The adjustable arm K may be adjusted to suit the construction of the mule, and, together with the front bearing-arm J, accommodates the inclined doffing-shaft L, which projects in front of the mule-carriage and is provided with an operating handle or crank M, by means of which the same may be readily manipulated. A small bevel-pinion N is keyed to the inner lower end of the inclined shaft L and is adapted to be normally out of gear with the large bevel gear-wheel H and be thrown into gear with the said bevel-gear at the proper moment when doffing. A sectional adjustable brace O comprises the overlapping slotted sections *o* and *o'*, respectively, which are held together by the adjusting-bolt *o'*. The section *o* engages over the shaft L between the arm K and the bevel-pinion N on said shaft, while the lower adjustable section *o'* is bent at a suitable angle to its shank and terminates in a slotted securing end P, which is bolted on any of the ordinary cross-pieces inside of the carriage, or to any suitable point of attachment in said carriage, in order to steady and support the inner sliding end of said shaft, and thus hold the pinion N in a position to always be thrown in gear with the driving-drum gear-wheel.

The doffing-shaft L is provided between the depending bearing-arms J and K, respectively, with the collars Q, the inner one of which adjacent to the adjustable arm K receiv-

ing one end of the spring R, coiled upon said shaft, and the other end of which bears against the inner side of the depending arm K. The normal tension of this spring presses against the collar and, forcing the shaft to the front of the carriage, holds the bevel-pinion out of gear with the driving-drum, and in this position the mule-carriage is in motion and in operation.

10 Mounted upon the shaft L, adjacent to the front bearing-arm J and against the adjacent collar Q, is the cam-casting S. The said cam-casting S normally fits snugly between said arm J and the adjacent collar, and the same
15 is provided with a forwardly-projecting cam-flange T, which, as the casting is turned up by the operator by means of the operating-handle U, rides over the inner face of the depending bearing-arm J, and thus by bearing
20 against the stationary collar Q, forces the shaft L inward and throws the bevel-pinion thereon into gear with the driving-drum bevel-gear. The shaft L may now be turned to effect the doffing of the mule-carriage.
25 It can be readily seen that this attachment greatly facilitates the operation of doffing. When the bobbins are full, the ordinary faller-wires mentioned are lowered to throw the yarn below the bottom of the bobbins.
30 Having thrown the doffing attachment in gear with the spindle-driving drum, as desired, the doffing-shaft is now turned to wind the yarn around the spindles until the full cops or bobbins are removed. The empty
35 bobbins are now placed on the spindles, the faller-wires raised, and the doffing-shaft turned to start the yarn on the bobbins, as will be quite apparent. The doffing attachment is now thrown out of gear with the spindle-driving drum and the work of the mule
40 proceeds.

The construction, operation, and advantages of the herein-described doffing attachment for spinning-mules are thought to be apparent without further description.

45 Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a doffing attachment for spinning-
50 mules, the combination, with the carriage and the spindle-driving drum carrying a gear-wheel, of a doffing-shaft journaled in said carriage and provided with a pinion adapted to be thrown in and out of gear with said drum
55 gear-wheel, substantially as set forth.

2. In a doffing attachment for spinning-mules, the combination, with the carriage and

the spindle-driving drum carrying a gear-wheel, of a spring-pressed and sliding doffing-shaft journaled in said carriage and provided
60 with a pinion at one end, normally held out of gear with said gear-wheel, and means for throwing said pinion into engagement with said gear-wheel, substantially as set forth.

3. In a doffing attachment for spinning-
65 mules, the combination, with the carriage and the spindle-driving drum carrying the bevel gear-wheel, of an adjustable bearing-bracket secured to said carriage, a spring-pressed and sliding doffing-shaft journaled in said adjustable bracket and provided at one end with a
70 bevel-pinion normally held out of gear with said gear-wheel, and means for throwing said pinion into engagement with said gear-wheel, substantially as set forth.

4. In a doffing attachment for spinning-
75 mules, the combination, with the carriage and the spindle-driving drum carrying a bevel gear-wheel, of a bearing-bracket secured to said carriage-frame and provided with a fixed
80 and a vertically-adjustable bearing-arm at opposite ends thereof, a spring-pressed doffing-shaft mounted in said arms and provided at one end with a bevel-pinion normally held
85 out of gear with said gear-wheel, a sectional adjustable brace mounted on the pinion end of said shaft and connected with a suitable point of attachment, and means for throwing
90 said pinion into engagement with said gear-wheel, substantially as set forth.

5. In a doffing attachment for spinning-
95 mules, the combination, with the carriage and the spindle-driving drum carrying a bevel gear-wheel, of a bearing-bracket secured to said carriage and provided with depending bearing-arms, a doffing-shaft mounted in said
100 arms and provided with a bevel-pinion at one end, an operating crank or handle at the opposite end and intermediate collars, a coiled spring mounted on said shaft and bearing
105 against one of said collars to normally hold said bevel-pinion out of gear with said gear-wheel, and a cam-casting mounted on said shaft and working against the inner face of one of said bearing-arms and one of said collars to throw said pinion into engagement with
said gear-wheel, 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.

GEORGE D. SECOR.

Witnesses:

JACOB H. SECOR,

CORNELIUS B. HEWITT.