

(No Model.)

M. L. NICHOLS.
TWINE LOOSENER.

No. 386,411.

Patented July 17, 1888.

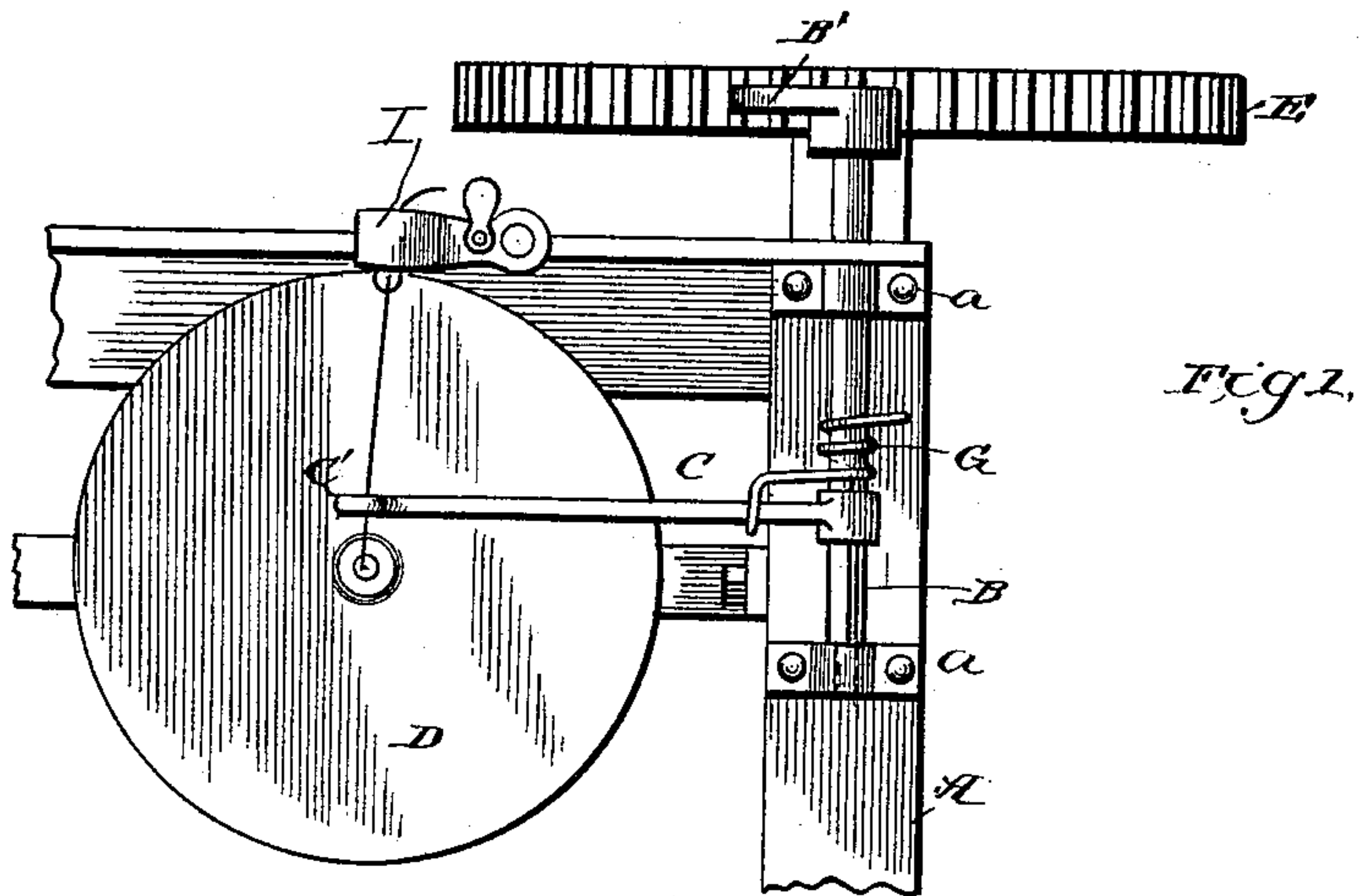


Fig. 1.

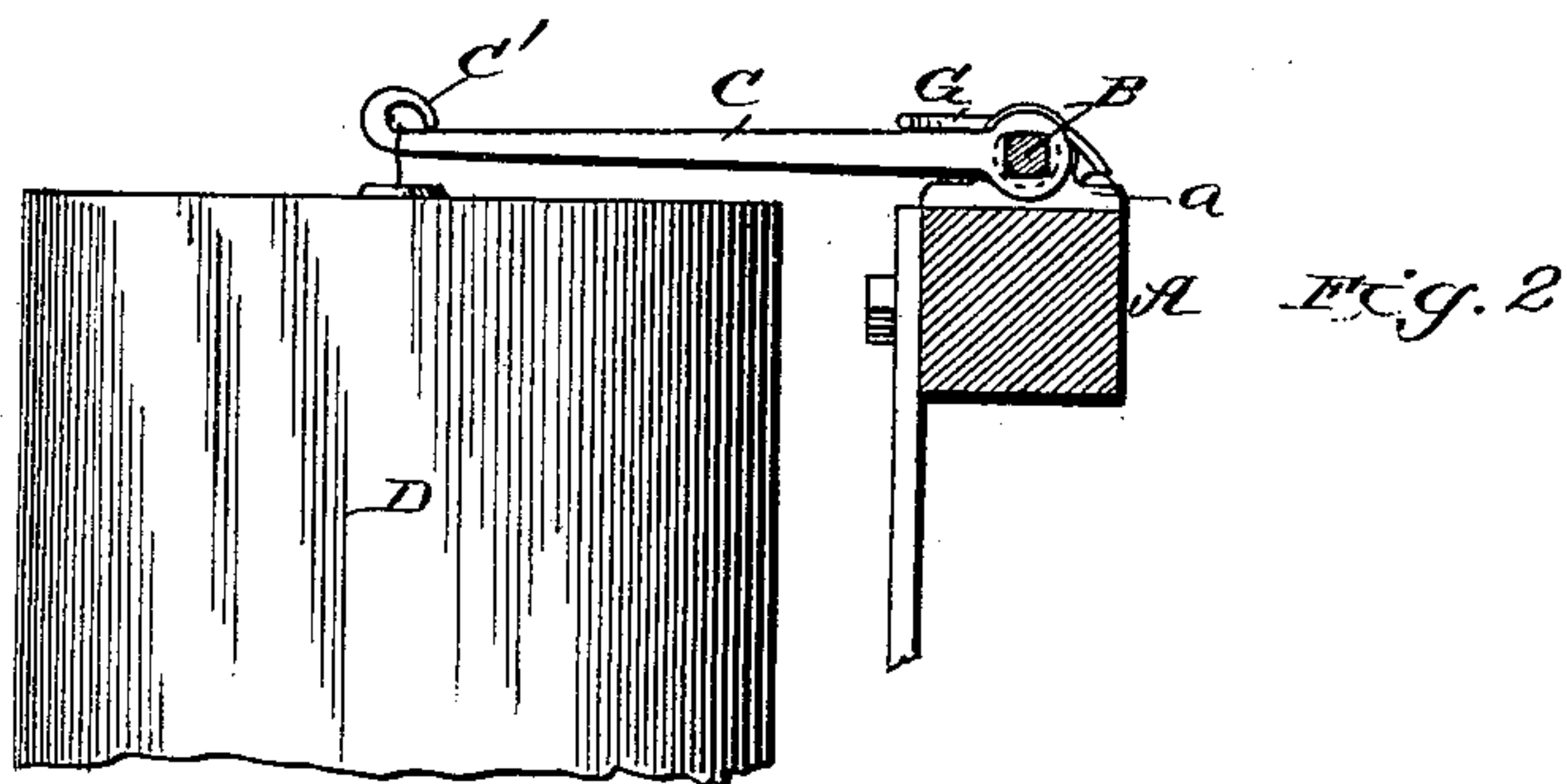


Fig. 2.

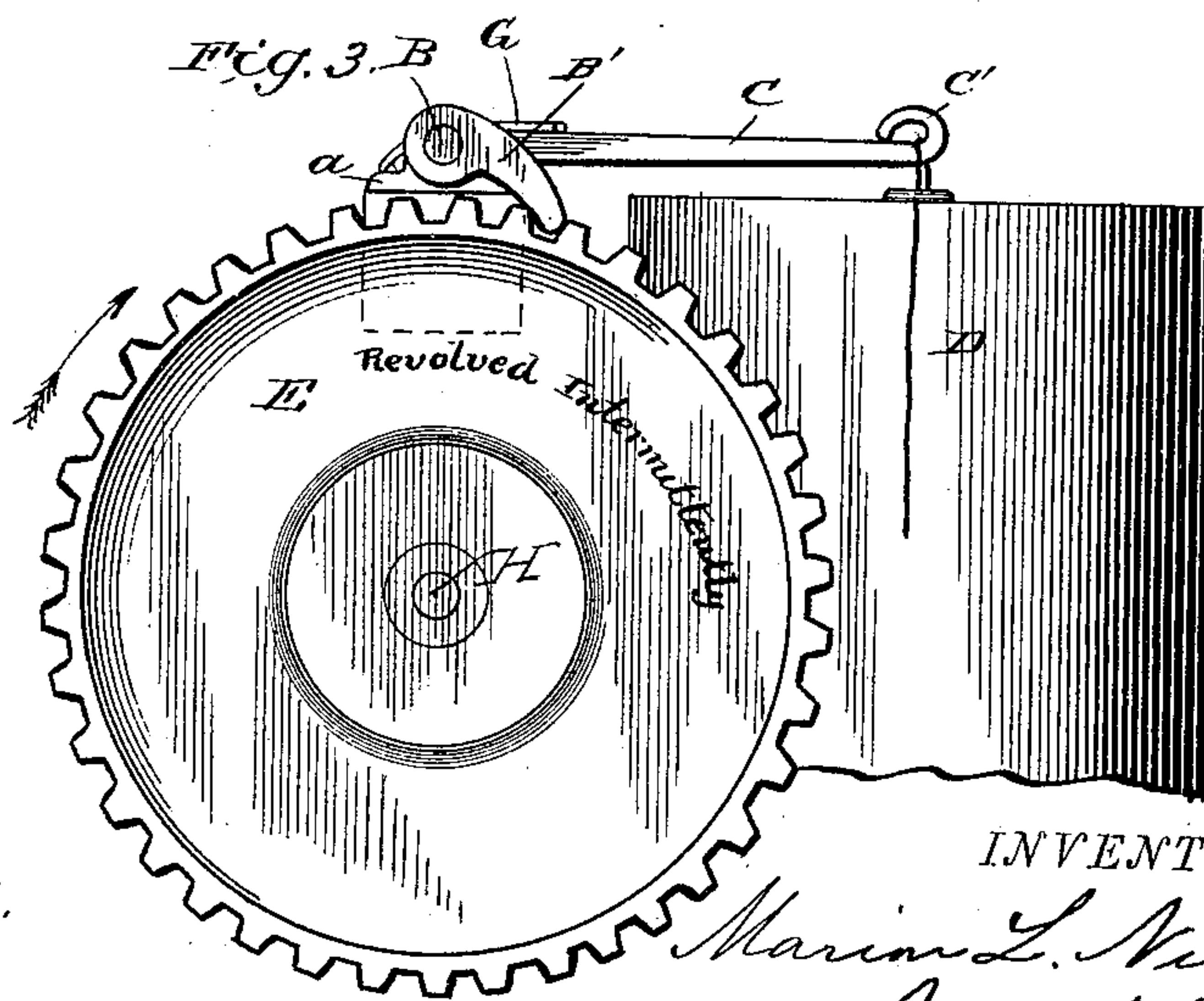


Fig. 3.

WITNESSES
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TWINE-LOOSENER.

SPECIFICATION forming part of Letters Patent No. 386,411, dated July 17, 1888.

Application filed February 1, 1888. Serial No. 262,659. (No model.)

To all whom it may concern:

Be it known that I, MARION L. NICHOLS, of the city, county, and State of New York, have invented certain new and useful Improvements
5 in Twine-Looseners, of which the following is a full and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to a novel means for
10 automatically loosening the twine in the box of grain-binders to remove the knots and kinks therein and place it in good condition to pass to the tension and take-up and through the eye of the needle.

15 My invention consists in the combination, with the twine-box, of a vibrating arm having an eye formed therein, through which the twine passes from the box to the tension and take-up; and, further, in means for imparting
20 a vibrating movement to the arm.

In the accompanying drawings, Figure 1 is a plan or top view of a portion of a binder-frame, showing the gear-wheel, from which motion is communicated to the knotter-operating cam and gear-wheel, the twine-box, and the relation of my improved device thereto.
25 Fig. 2 is a side view of the twine-box with one of the frame-bars in section and the vibrating arm mounted in bearings on said frame-bar. Fig. 3 is a view taken from the rear
30 side of the machine, showing the gear-wheel and the means by which the arm is vibrated by said wheel.

The twine-box is preferably secured to the
35 binder-frame between cross-beams, only one, A, being shown, that being the one which supports the knotter-operating shaft, and upon this beam is supported the mechanism for drawing the twine from the box, which will
40 now be described. Secured to the upper face of the bar A in suitable bearings, *a a*, is mounted a rock-shaft, B. This rock-shaft has mounted upon and keyed or otherwise secured thereto about midway of the bearings
45 an arm, C. This arm C extends out over the twine-box D and about in line with the eye or opening therein, through which the twine passes therefrom. The forward end of this arm is perforated or provided with an eye, C',
50 for the passage of the twine, and through which it is passed immediately from the box.

The rock-shaft B is extended out over the gear-wheel E, through which motion is communicated to the knotter-operating cam and gear-wheel, mounted upon the same shaft, H. 55

The arm C is constantly vibrated by the engagement of the teeth of the gear E with the arm, said wheel, however, being operated or revolved only when the binding devices are being operated. 60

A spring, G, surrounds the shaft B and engages by one end the arm C, while the opposite end bears against the bar A and acts to hold the arm C in close proximity with the twine-box, and also to hold the arm B' in en- 65 gagement with the teeth of the gear E, in position to be acted upon thereby as it revolves in the direction shown by the arrow, the upward movement being imparted to the arm by the engagement of the teeth with the arm B', and the arm C returned to its normal position by the action of the spring G thereon. 70

The tension device I may be of any preferred form, as also the take-up. (Not shown.)

The wheel E, as before stated, is the one 75 through which motion is communicated to the knotter-operating cam and gear-wheel; but it will be readily seen that any of the wheels in the train which communicate motion to the shaft of the cam and gear-wheel, or a wheel 80 which receives motion therefrom, may be employed to communicate motion to said shaft so long as a constant vibration or movement is imparted to the arm C' during the knotting action. 85

By the construction and arrangement described it will be seen that the drawing of the twine from the box is greatly facilitated and the twine prevented from being held by kinks or knots within the ball, and consequently 90 serves to prevent the breaking of the twine, which is often the case where the twine passes directly to the tension and take-up from the twine-box.

Having now described my invention, I 95 claim—

1. The combination, with the rock-shaft, of the twine-loosening arm mounted thereon and having an eye formed therein, through which the twine passes from the twine-box to the 100 tension and take-up device, and an intermittently-operated wheel, whereby a shaking or

vibrating motion is imparted to the arm during the binding action to loosen the twine in the box, as set forth.

2. The combination, with the rock-shaft, of
5 the twine-loosening arm mounted thereon, and having an eye formed therein, through which the twine passes from the twine-box to the tension and take-up devices, and an intermittently-operated wheel located in the binder

mechanism train of gears, substantially as described, whereby a shaking or vibrating motion is imparted to the arm during the binding action to loosen the twine in the box, as set forth.

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