

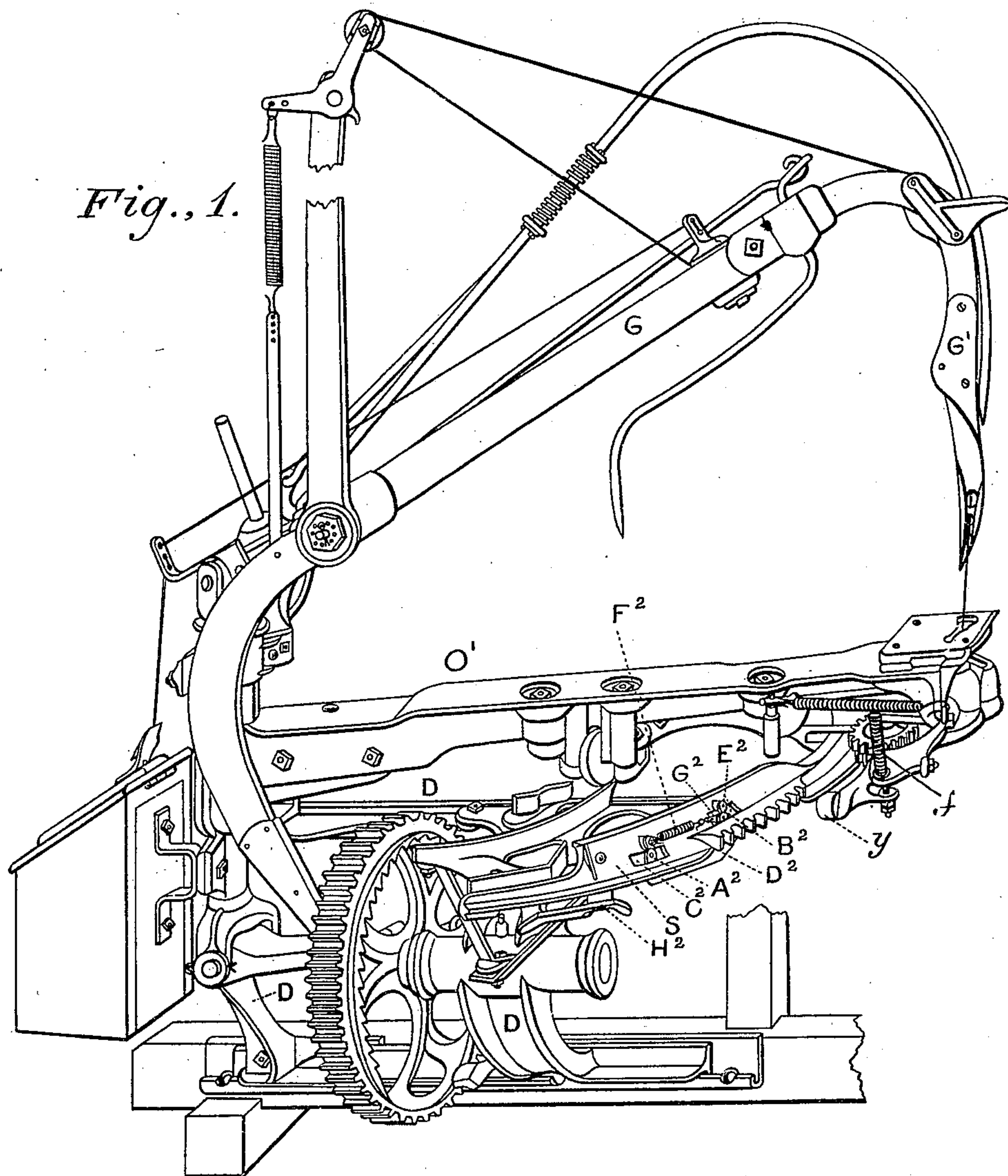
(Model.)

3 Sheets—Sheet 1.

C. YOUNG.  
GRAIN BINDER.

No. 258,687.

Patented May 30, 1882.



*Witnesses:*  
*Franck L. Curaud,*  
*W. B. Huntemann*

*Inventor:*  
*Calvin Young*  
*by A. M. Smith & Co.*  
*Attorneys*

(Model.)

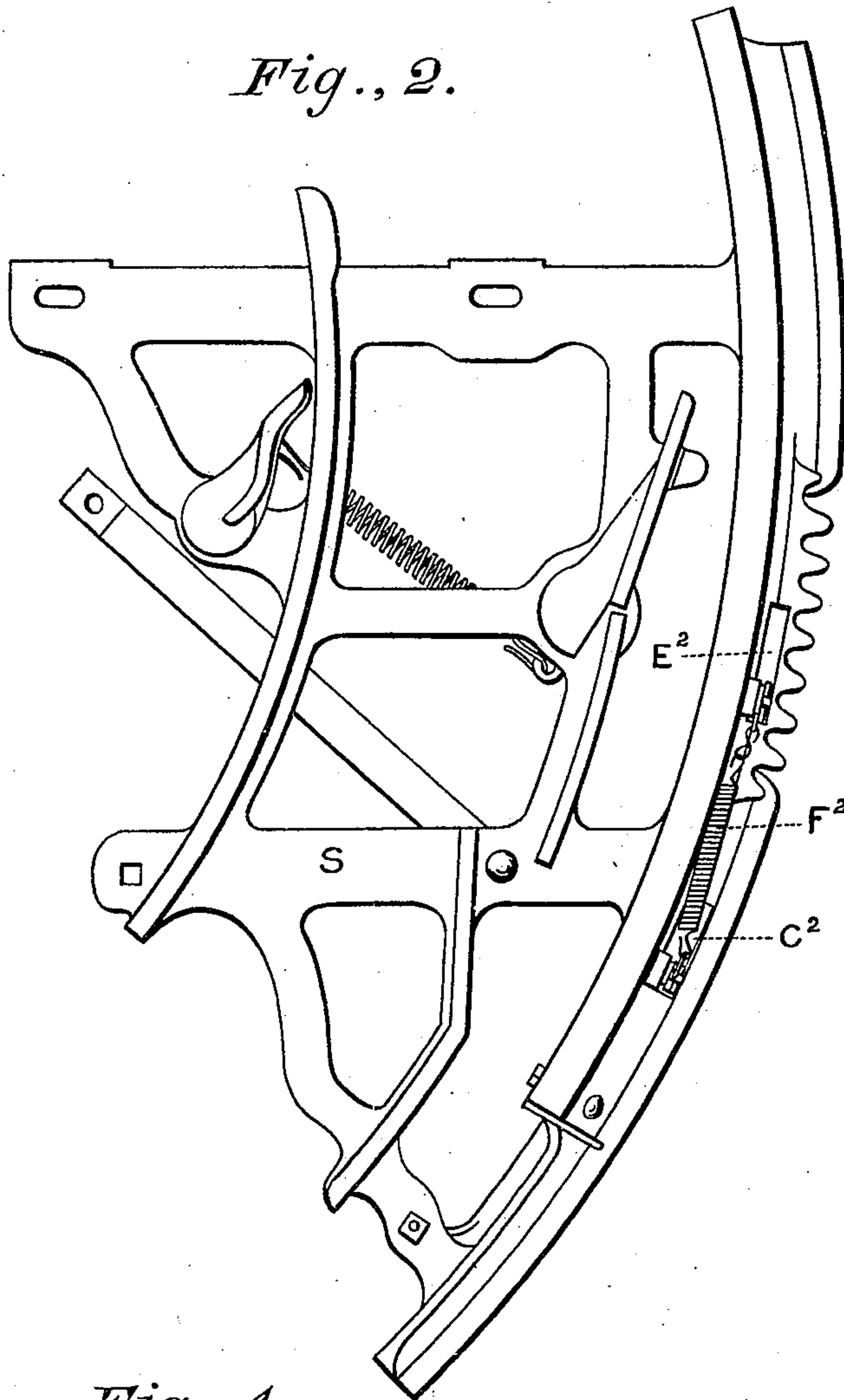
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C. YOUNG.  
GRAIN BINDER.

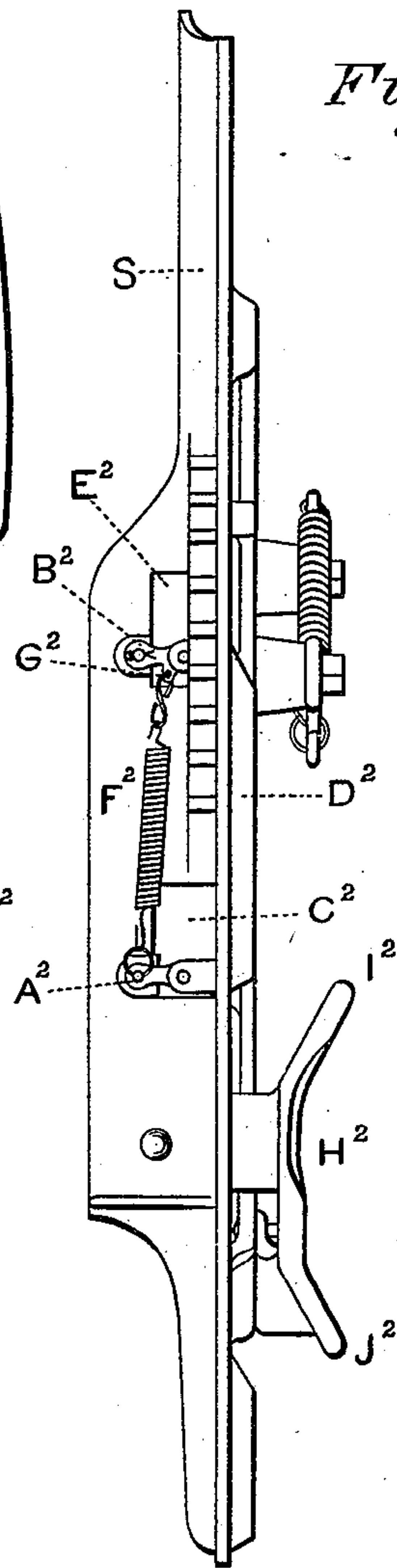
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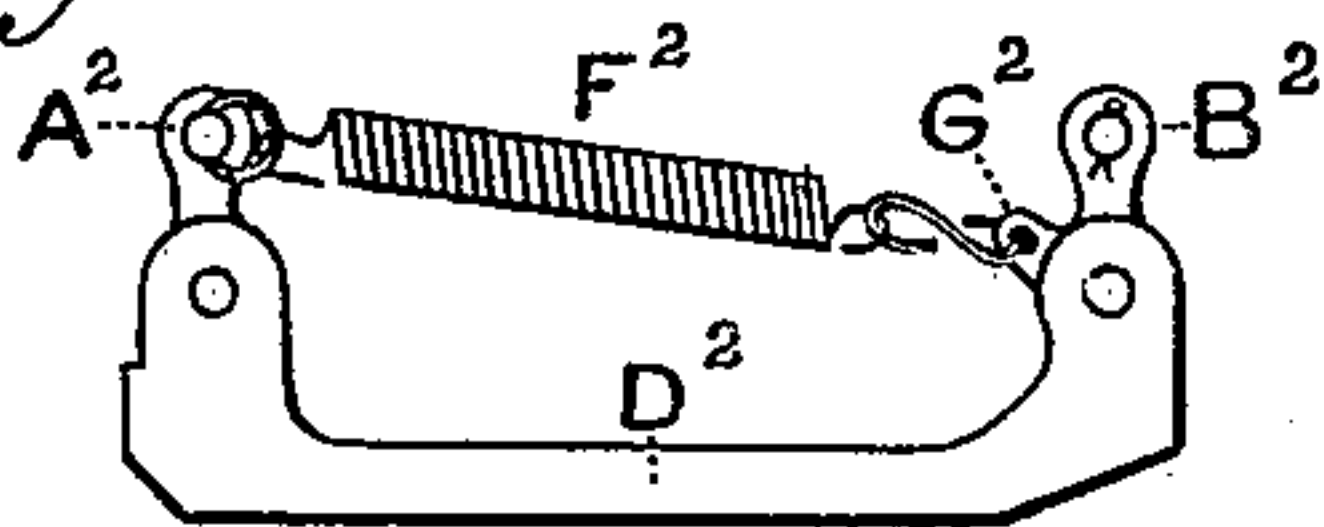
*Fig., 2.*



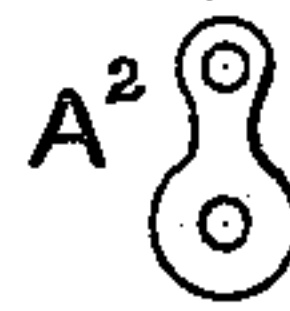
*Fig., 3.*



*Fig., 4.*



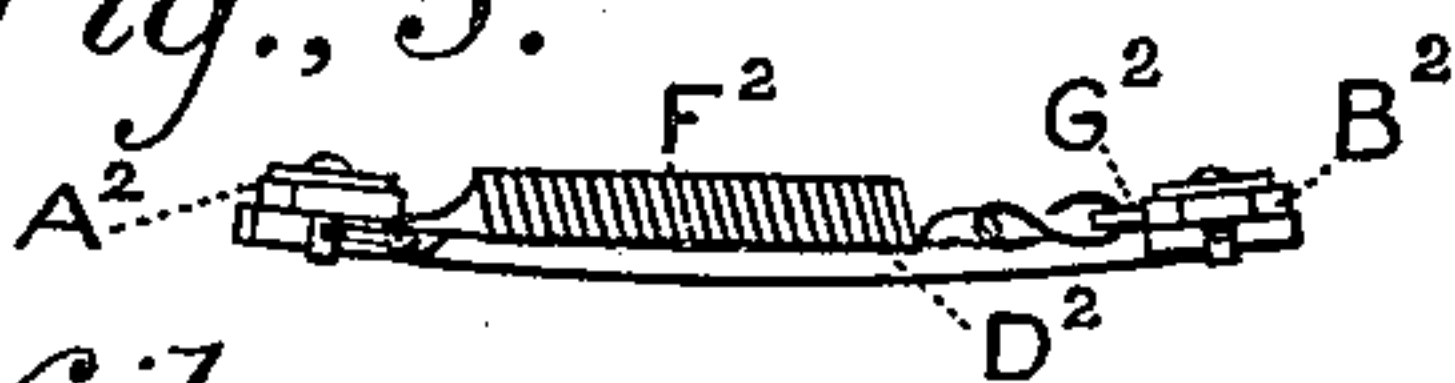
*Fig., 6.*



*Fig., 7.*



*Fig., 5.*



Witnesses:

Frank L. Curand  
W. H. Huntemann.

Inventor:

Calvin Young  
by A. L. Smith & Co.  
Attorneys

(Model.)

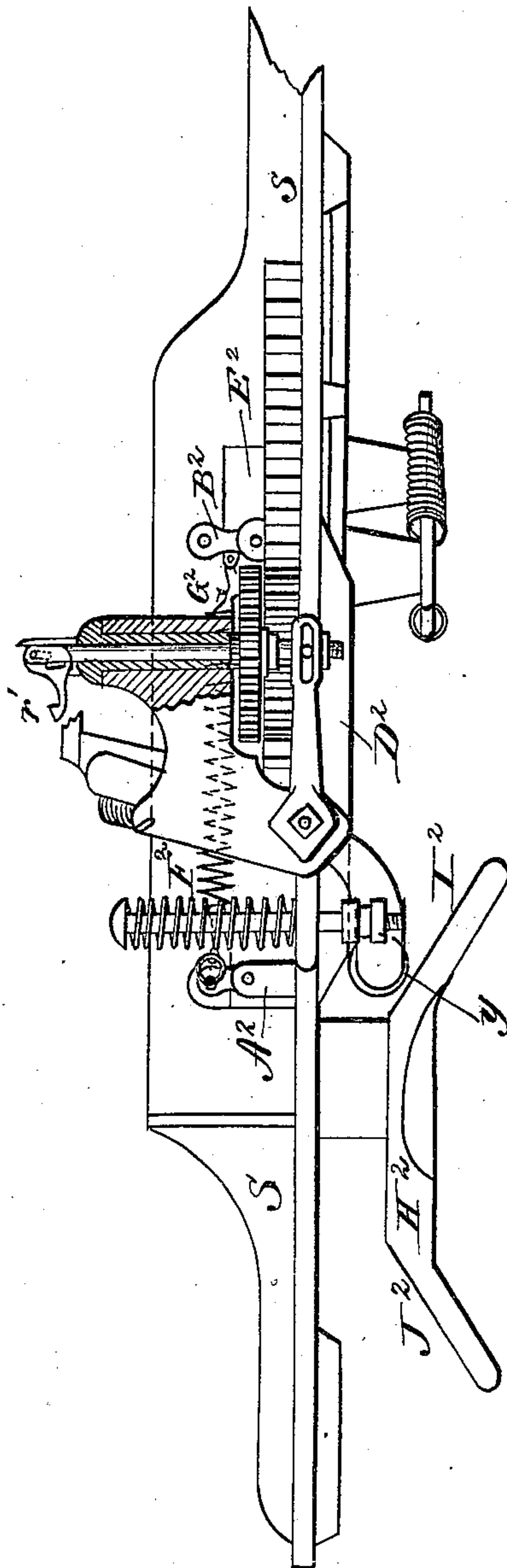
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*Fig. 8.*



*Witnesses:*  
*A. L. Ourand*  
*Wm. L. Speiden.*

*Inventor*  
*Calvin Young,*  
*by A. M. Smith & Co.*  
*Attorneys*



# UNITED STATES PATENT OFFICE.

CALVIN YOUNG, OF AUBURN, NEW YORK.

## GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 258,687, dated May 30, 1882.

Application filed July 16, 1881. (Model.)

*To all whom it may concern:*

Be it known that I, CALVIN YOUNG, a citizen of the United States, residing in the city of Auburn, county of Cayuga, State of New York, have invented a new and useful Improvement in Grain-Binders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a grain-binder attachment to harvesters, or so much thereof as is necessary to show my improvement, the binding-table being removed for the purpose. Fig. 2 is a plan view of the switch-frame detached with my improvement applied, and Fig. 3 is a side or front elevation of the same. Fig. 4 is a side elevation of my improved swinging track or cam plate detached from the switch-frame, and Fig. 5 is a plan view of the same. Figs. 6 and 7 are side elevations of the links by which the swinging track is suspended, and Fig. 8 is a front elevation similar to Fig. 3, but showing in addition thereto a knotter-hook and its connections adapting it to be operated by the swinging cam or track.

The invention relates to that class of machines in which the knotting devices are carried back and forth underneath a slotted platform or table on which the grain is bound by a horizontally-oscillating arm moving over a stationary rack and switch plate, through which plate and its connections the necessary movements are imparted to the knotting devices during the movement of the carrying-arm over said plate; and it consists in providing the stationary switch-plate referred to with a pendent swinging track or cam-plate arranged to act upon the knotter-hook for opening it only in the outward throw of the knotter-carrying arm, said track or cam swinging up out of the way of the devices operating said hook and permitting the latter to remain closed during the inward or return movement of said arm, thereby obviating the liability of cord being caught and entangled or displaced by said hook during such movement.

The knotting mechanism, together with the knotter and cord carrying arms and the means for operating the same, aside from the swinging track or cam referred to are not claimed

by me, and will therefore be described only so far as is necessary to an understanding of my improvement.

In the accompanying drawings, D represents the frame-work upon which the binding mechanism is supported, and through which it is connected with the harvester-frame.

O' is the horizontally-oscillating knotter-carrying arm; G, the needle and cord carrying arm; and S, the rack and switch frame, through which, with its attachments, the necessary movements are imparted to the knotting devices during the outward movement of the arm O' over said frame. The switch-frame is provided with a pendent track or cam plate, D<sup>2</sup>, which in previous constructions to mine has been made in the form of a rigid vertical rib, formed on the lower face of the switch-plate, and which operated (while the knotter-spindle was being rotated through the pinion on its lower end engaging with the rack on the switch-frame for the purpose of wrapping the cord upon it) to hold the knotter-hook open in the position shown in Fig. 8; but said track being made rigid, the hook was necessarily thrown open into the position shown during the return movement also, of the knotter-arm, rendering it liable to catch the cord in the rotary movement of its spindle and to displace or become entangled with it. To obviate this difficulty I suspend the track or camway D<sup>2</sup> in a curved slot in the switch-frame by means of two pendent links, A<sup>2</sup> and B<sup>2</sup>, which act like the links of a parallel ruler, allowing the cam track D<sup>2</sup> to rise and fall while maintaining the parallel relation of its lower cam-face to the lower face of the switch-frame. These links are suspended in slots in the frame, which allow them to swing up inward, or toward the inner side of the switch-frame, until the lower face of the cam-track is in the same plane with the lower face of the switch-frame, while they are prevented, by coming in contact with the outer end of the slots, when moving in the opposite direction, from swinging beyond a vertical position, or one about vertical, in which position the cam-track D<sup>2</sup> is held suspended below the switch-frame in position to act on the roller y, causing the latter, through its connecting devices, to operate upon the hook for opening it, as shown in Fig. 8. The



inner end of the swinging track  $D^2$  is inclined or beveled to permit the roller to run readily and easily down under the track in its outward movement for opening the hook, and its outer end also may be beveled or inclined, if desired, so as to allow the roller to pass off the track without jar. On the inward or return movement of the knotter-carrying arm the roller  $y$  comes in contact with the outer end of the swinging track or cam plate  $D^2$ , and causes the latter to swing inward and upward out of the way, allowing the roller to follow the lower face of the switch-frame, and the pivoted knotter-hook is thus allowed to remain closed during such movement, and the danger of its catching the cord referred to is obviated.

The link  $B^2$  has an ear,  $G^2$ , formed upon it, to which one end of the spring  $F^2$  is connected, the other end of said spring being connected with the pivot of link  $A^2$ . The tension of this spring serves to hold the end of the cam-plate  $D^2$  against the outer end wall of its slot when not overcome by the action of the roller  $y$  on its inward or return movement, and said plate is consequently always in position to act upon said roller, and through it upon the knotter-hook on the outward or operative movement of the knotter-arm.

A lower fixed track,  $H^2$ , provided with downwardly-inclined deflecting ends  $I^2$  and  $J^2$  is bolted to the switch-frame near its outer edge, said track serving to insure the closing of the knotter-hook for the completion of the knot. The inclined end  $I^2$  forces the roller upward after it has passed from the swinging track  $D^2$  and so closes the hook, while the outer inclined end  $J^2$  allows the roller to be depressed by a cam at the outer end of the throw of the knotter-carrying arm for the purpose of opening the hook to release the knot, at the same time insuring the lifting of the roller and the closing of the knotter-hook as the arm  $O'$  starts upon its inward or return movement.

Having now described my invention, what I claim as new is—

1. In a grain-binder, the horizontally-vibrating knotting devices, in combination with a

switch and rack frame provided with a track or cam suspended from said frame by swinging links adapting it to rise and fall bodily.

2. The combination, in a grain-binder, of a switch-frame, a pendent swinging track or cam suspended therefrom, a fixed lower track or cam, and mechanism for actuating the knotter-shaft.

3. The combination, in a grain-binder, of a switch-frame, a movable track or cam connected with said frame by swinging links, a fixed lower track or cam, a horizontally-vibrating knotter-shaft and mechanism for actuating said shaft.

4. The combination, in a grain-binder, of a switch-frame, a horizontally-vibrating arm moving over said frame and carrying the knotting devices, mechanism for actuating the knotter-shaft, a movable track or cam suspended from the switch-frame by swinging links, and a fixed lower track or cam operating in connection with the swinging track or cam for actuating the knotter-hook.

5. The swinging track or cam plate, suspended in a vertical slot in the switch-frame by means of parallel links, substantially as described, whereby it is adapted to be lifted or swung up out of the way for allowing the knotter-hook to remain closed on the return or backward movement of the knotter-carrying arm, in combination with the spring for throwing said cam-plate into position for acting on said hook on its outward movement, substantially as described.

6. The combination, with the switch and rack frame for actuating the horizontally-oscillating knotting devices, of the swinging track or cam plate  $D^2$ , pivoted thereto by the parallel links  $A^2$  and  $B^2$ , the spring  $F^2$ , and the fixed lower track,  $H^2$ , having the inclined ends  $I^2$  and  $J^2$ , all arranged and operating substantially as described.

In testimony whereof I have hereunto set my hand this 7th day of July, A. D. 1881.

CALVIN YOUNG.

Witnesses:

C. WHEELER, Jr.,  
C. W. UPHAM.