

(No Model.)

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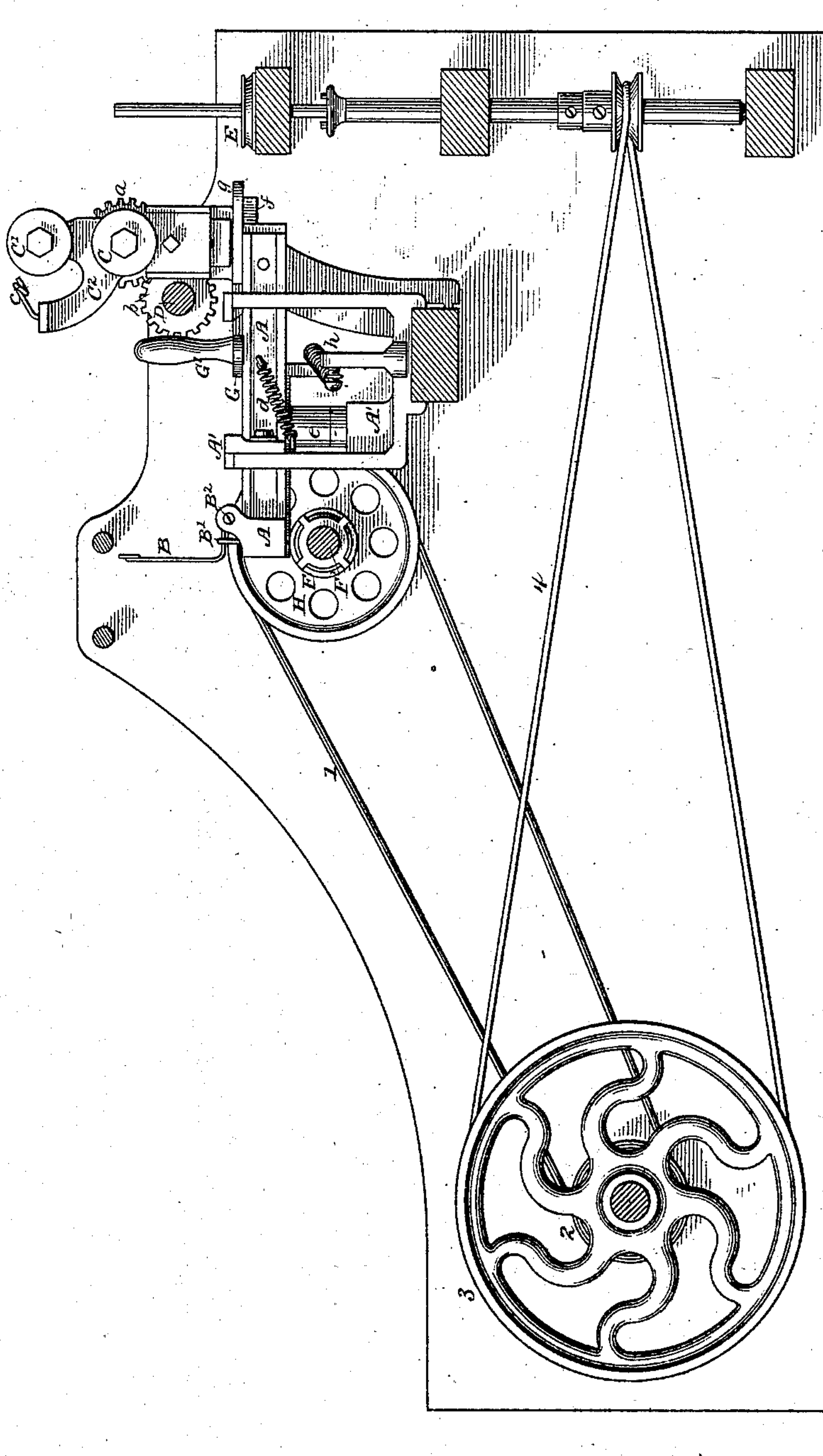
J. S. UTLEY.

STOP MOTION FOR WINDING AND TWISTING MACHINES.

No. 255,739

Patented Mar. 28, 1882.

Fig. 1,



WITNESSES

Wm A. Skunkle
Geo W. Buck

By *his Attorney*.

INVENTOR

James S. Utley
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(No Model.)

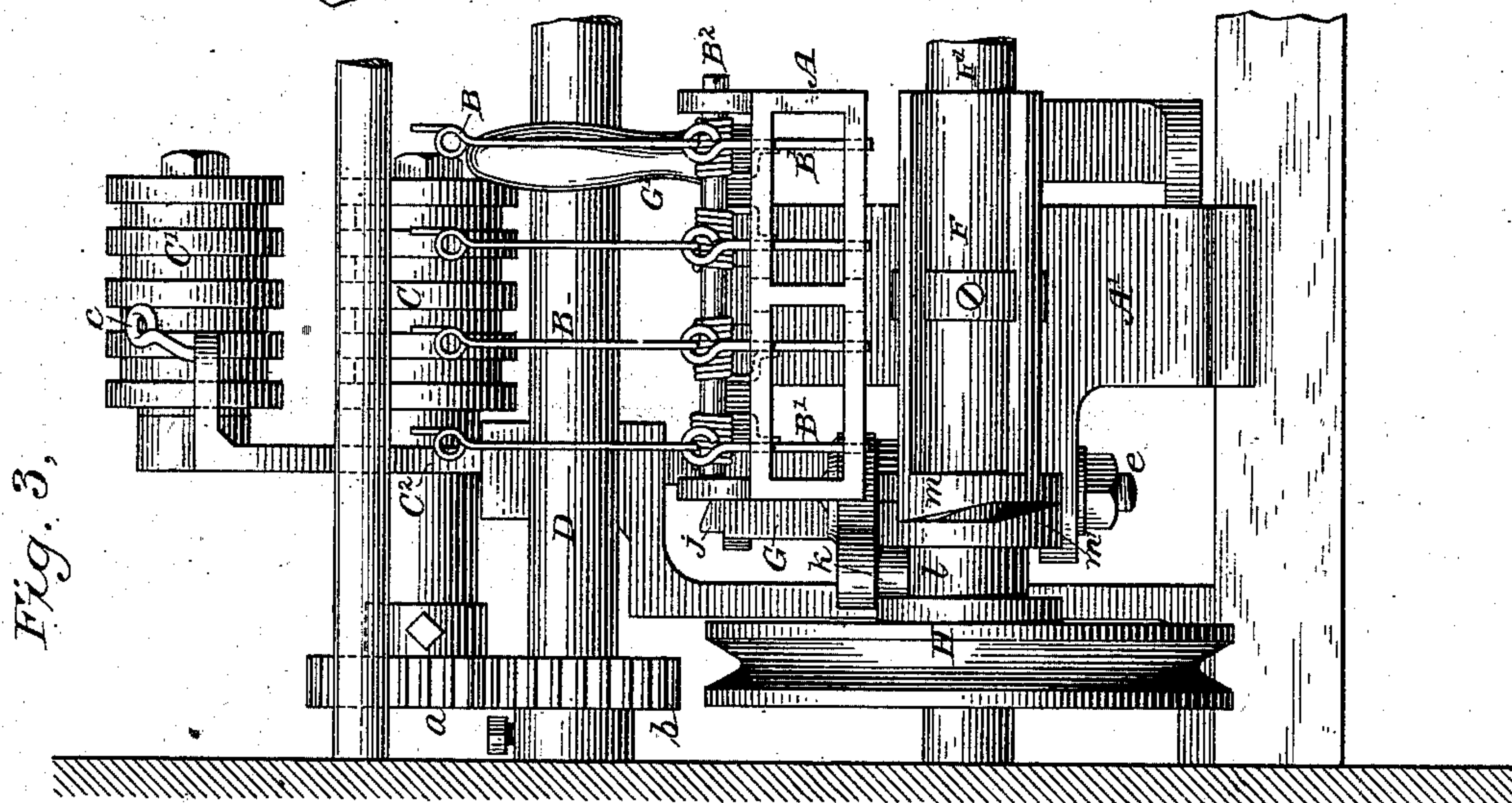
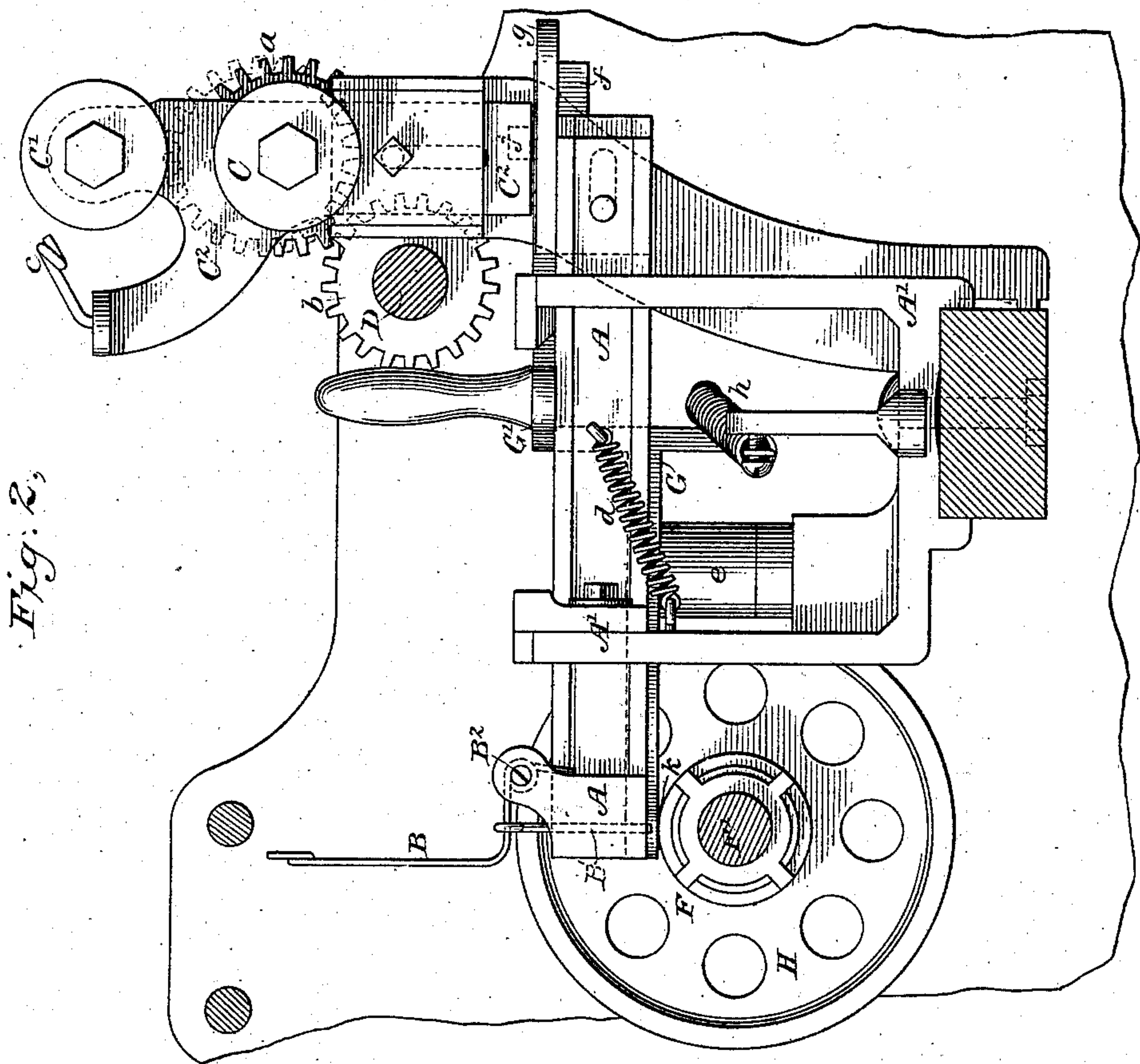
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Patented Mar. 28, 1882.



WITNESSES

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3 Sheets—Sheet 3.

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Fig. 5,

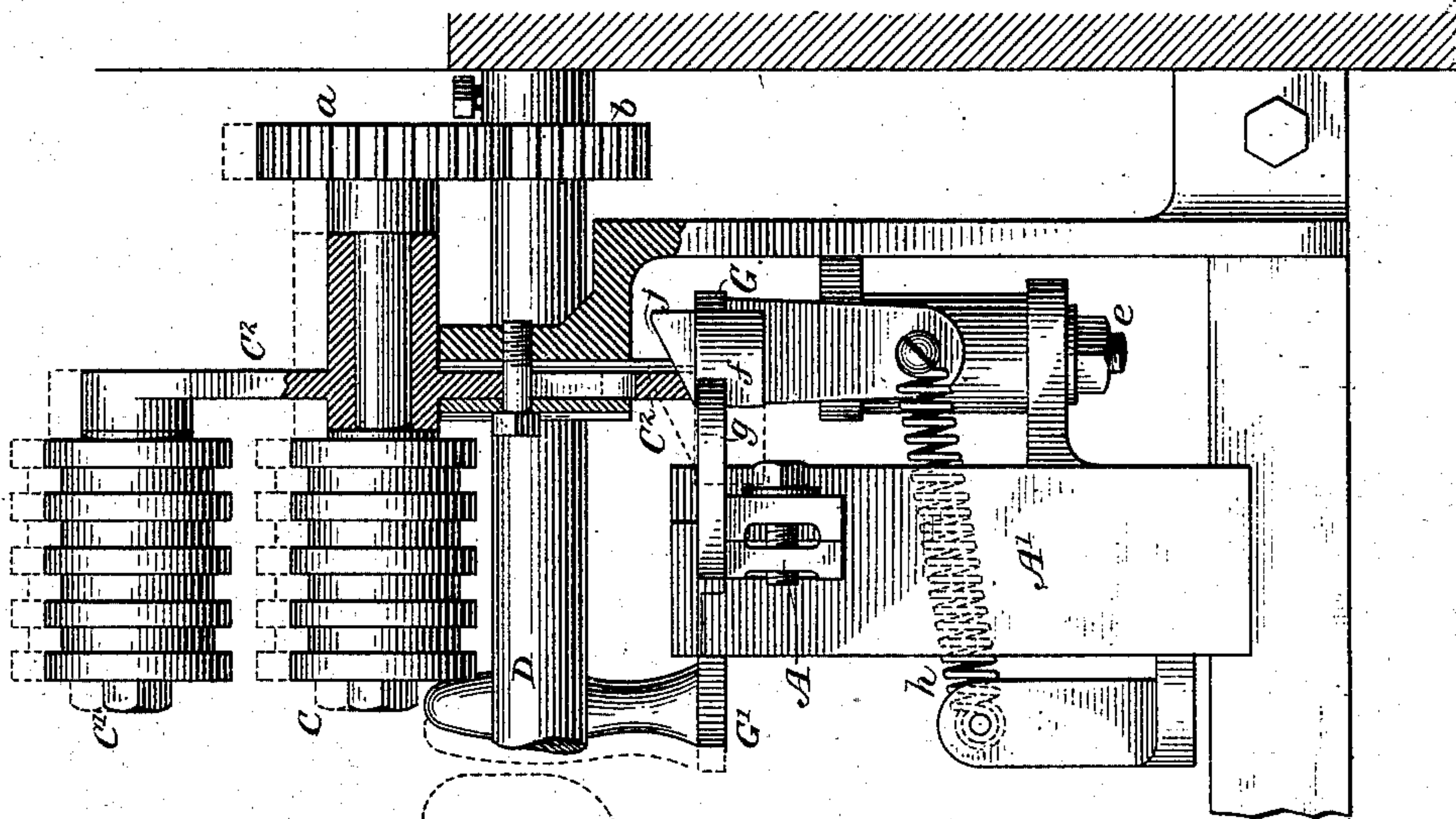
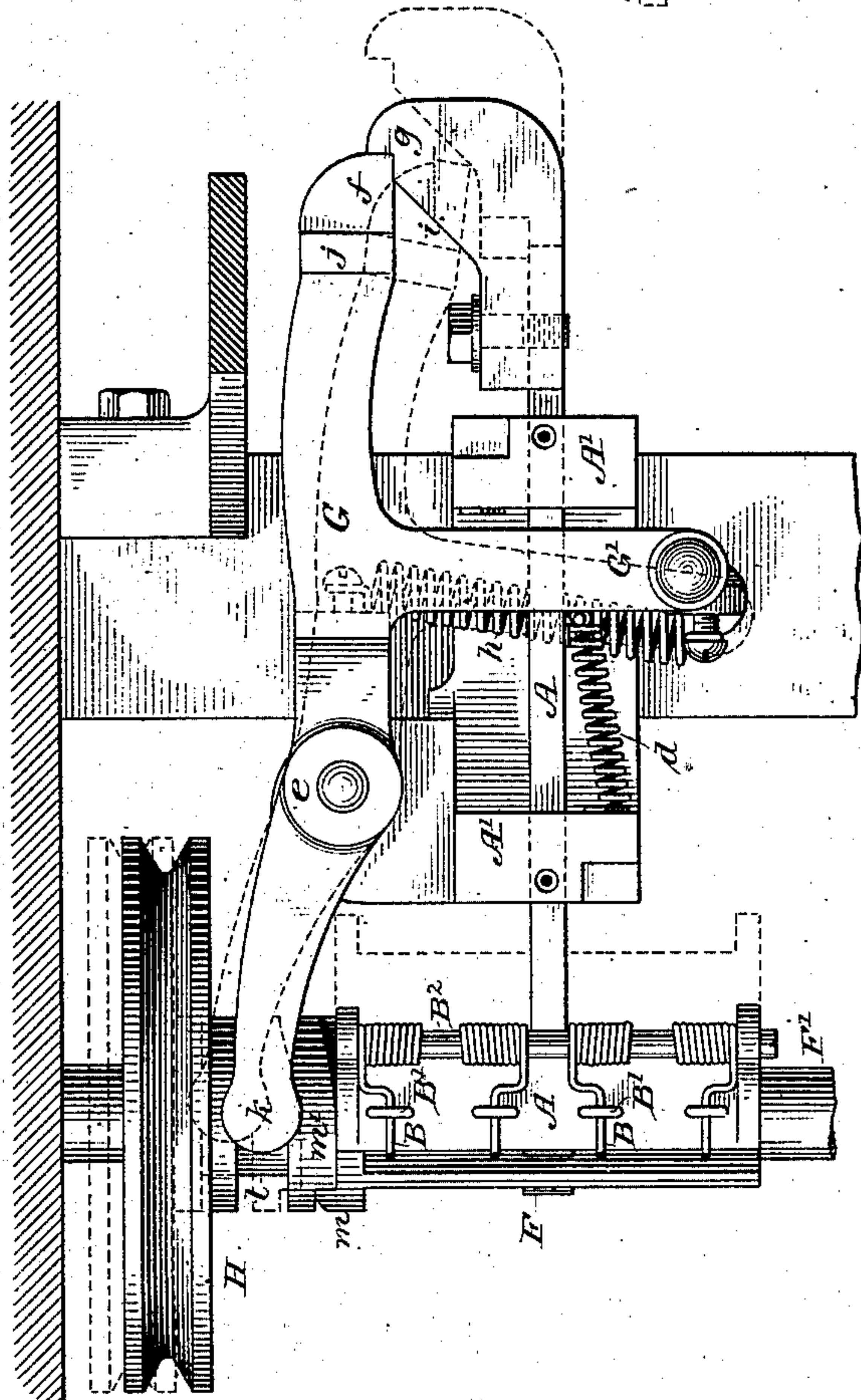


Fig. 4,



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES S. UTLEY, OF PAWTUCKET, RHODE ISLAND.

STOP-MOTION FOR WINDING AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 255,739, dated March 28, 1882.

Application filed October 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. UTLEY, of Pawtucket, State of Rhode Island, have invented certain new and useful Improvements in Stop-Motions for Winding and Twisting Machines, of which the following is a specification.

My invention has relation to stop-motions for winding and twisting machines; and it relates particularly to that kind of mechanism of this class which is organized and arranged to arrest the movement of both the spindle and the feed simultaneously upon the breaking of any one of the threads which are passing to the spindle, with a view to prevent breakage of the remaining threads, or the production of a thread composed of less than the normal number of strands.

The shipping device which I employ in carrying my invention into effect is a vibratory latch-lever, connected at one end to a clutch, which serves to communicate movement from the driving-shaft to the spindle-gear or belting and at the other to the feed-roll stand. The lever is held in a position in which both the spindle and the feed-rolls are in action by means of the drop-bar head. When this head is moved back the lever is unlatched, and by a spring is caused to move in a direction to simultaneously unclutch the spindle and arrest the feed. It remains in this position until the head, after the broken thread has been pieced, is moved back to its first position, said head when thus moved acting to return the lever against the stress of its spring to a position in which the feed and spindle will again be in gear with their drivers. The lever may have a handle which can be used for this purpose, and the drop-wire head may be spring-controlled, so as to return to position when released from the lever. An incline on the drop-bar head is, when the lever is unlatched, acted on by the lever in such manner as to throw the head far enough back to be out of range of the cam. The cam, in fact, simply unlatches the lever by moving the head far enough back to bring the end of the lever against the incline, and the strong spring on the lever does the rest of the work.

The nature of my invention and the manner in which the same is or may be carried into

effect will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a sectional side elevation of so much of a winding and twisting machine as needed to illustrate my invention. Fig. 2 is a like view, on an enlarged scale, of that portion of the machine containing the drop-wire head and parts adjacent thereto. Fig. 3 is a front elevation of the same. Fig. 4 is a plan of the same with the feed-roll stand removed, and Fig. 5 is a rear elevation of the same.

A is the drop-wire head. B are the drop-wires. C C' are the feed-rolls, and C² the feed-roll stand. The lower feed-roll, C, is power-driven, and for this purpose has on its axle a pinion, *a*, which meshes with a pinion, *b*, on a rotary shaft, D, which, through suitable intermediaries, derives its motion from the driving-shaft of the machine. The upper feed-roll, C', is an idle-roll, and both rolls are grooved, as shown, although they may, if desired, be plain rolls. This is one known form of feed device in machines of this class, and requires no further explanation.

E is the spindle.

The machine in this instance is designed to twist and wind four threads, and for this purpose four drop-wires are provided. The threads pass from their bobbins or cops over a friction-cloth or its equivalent, (not shown;) thence through the drop or stop-motion wires B; thence through the guide-eye *c* in front of the feed-rolls, which brings the threads together into one. From the guide *c* the aggregated threads pass around the feed-rolls C C' as many times as there are grooves therein, passing thence over a glass rod and through an eye at the rear of the rod, and vertically over the spindle, (not shown,) and thence to the spindle, where they are twisted and wound into one thread in the usual way.

Having indicated in a general way the organization and operation of the machine, I now proceed to a description of the construction and mode of operation of those parts of the machine in which my invention is comprised.

The drop-wire head A is mounted in guides on a stand, A', so that it can slide back and forth in the direction of the width of the machine. It is by a spring, *d*, (connected at one end to the head A and at the other end to

stand A',) held normally in the position shown in Fig. 2, in which position the stop-motion pins B' (which are looped to and form part of the drop-wires B) will, when any one of them is permitted to drop, fall in the path of a four-leaved revolving cam F. Under these circumstances the cam, striking against the drop-wire, will force back the head A.

The drop-wires, as usual, consist each of the eye part B, mounted so as to be free to vibrate on the axle B², and the stop-motion pin B', looped to B and extending down through a guide-opening in the head. For the sake of clearness the wires are shown in their elevated position out of range of the cam F. This position, however, they assume only when threads under tension pass through their eyes, the threads serving to uphold them. When any one of the threads breaks its drop-wire falls, so as to bring its lower end, B', in the path of the cam, with the result above mentioned. This movement of the drop-wire head, due to the breaking of any one of the threads passing through the drop-wires, I avail of to arrest the movement of both the feed and the spindle. To this end I pivot to the machine, on a vertical axis, *e*, a lever, G. One end of this lever, as at *f*, is formed so that it will, when the drop-bar head A is in operative position, enter and engage a notch, *g*, on the front end of the head, as seen in Fig. 4, assuming the spindle side of the machine to be the front of the machine. A powerful spring, *h*, considerably stronger than the drop-wire head-spring *d*, pulls this end of the lever toward the head, so as to cause it to bear tightly against the head. Under these conditions the draw-bar head serves to latch the lever in position. When, however, the draw-bar head by the action of cam F is pushed back, the lever is unlatched, and the spring *h* will now assert itself, pulling the lever over and causing its end to travel down the incline *i* on the head A, with the effect of pushing back and holding in the position the drop-wire head out of range of the cam F, as indicated by dotted lines in Fig. 4. The cam thus serves to unlatch the lever from the head, while the lever, as soon as released, acts to throw back the head out of range of the cam. On the upper face of the latch end of the lever G is an incline, *j*, which is intended to stop the feed. For this purpose the feed-roll stand C² is supported in guides, so as to be vertically movable. When raised it lifts the pinion *a* out of gear with its driver *b*, and so arrests movement of the feed, and when dropped it brings the two into gear again. The toe of the incline *j* lies under the correspondingly-inclined lower end of the stand in such position that when the lever G is in its latched position the stand will be permitted to drop low enough to bring the pinions *a b* into gear, as indicated in full lines in Fig. 5. When, however, the lever is unlatched and is brought by its spring to the position shown in dotted lines in Fig. 4, the incline *j* will be forced under the stand, with the effect of lifting the latter far

enough to throw the pinions *a b* out of gear, as indicated by dotted lines in Fig. 5, thus arresting the feed.

To arrest movement of the spindle E, I make use of the opposite arm of the lever G. This arm at its end is provided with a pin, *k*, as shown in Figs. 3 and 4, which enters an annular groove, *l*, in the hub of a pulley, H, mounted loosely on the cam-shaft F', which is the main or driving shaft of the machine. Upon the revolving cam-shaft is fixed one half of a clutch, *m*, the other half, *m'*, of which is formed on the contiguous face of the pulley-hub. The pulley H, through suitable intermediate belts and pulleys, (indicated at 1 2 3 4, Fig. 1,) is connected to the spindle-whirl, and thus drives the spindle. When the lever G is in its latched position (shown in full lines in Fig. 4) the pulley H is in clutch with the revolving cam-shaft, and thus revolves the spindle. When, however, the lever is unlatched and in the position indicated in dotted lines, Fig. 4, the pulley, by means of the pin *k*, will be forced back out of clutch with the cam-shaft, and the spindle consequently will cease to revolve. Thus, upon the forward movement of the drop-wire head, due to the breaking of any one of the threads, the lever will be unlatched, with the effect of simultaneously stopping the movement of both feed and spindle. The parts remain in this position until after piecing the broken thread, the drop-wire head is again brought back to its first position, and the lever is again latched in place. To facilitate this readjustment of the parts I provide the lever G with a handle-arm, G', by which it can be moved against the stress of its spring *h*. When thus moved it will cease to press on the drop-wire head, and the latter, by the action of its spring *d*, will return automatically to its first position.

I have described, in illustration of my invention, mechanism which I believe to be best adapted to carry the same into effect, and which possesses advantages on the score of simplicity, economy, and efficiency over other devices which could be employed for the same purpose. It is manifest, however, that the result aimed at by me can be attained by mechanical devices different in structure from those hereinbefore described. I do not therefore limit myself to the particular instrumentalities herein shown and specified by me in illustration of my invention; but

What I claim, and desire to secure by Letters Patent, is as follows:

1. In combination with the spindle-driving and feed mechanisms, the pivoted spring-controlled shipping-lever, engaging at one end the clutch of the spindle-driving mechanism and provided with an incline at its other end to act on the feed-roll stand, and the movable drop-wire head, acting, when in operative position, to latch the lever in a position in which both spindle and feed are in gear with their drivers, substantially as and for the purposes hereinbefore set forth.

2. The spindle-driving and the feed mech-

anism and the spring-controlled shipping-le-
ver, provided with a handle and engaging said
spindle-driving and feed mechanisms, sub-
stantially as described, in combination with
5 the revolving stop-motion cam, the drop-wires,
and the movable drop-wire head, formed to en-
gage and latch the lever, and provided with a
spring to move it in a direction opposite to
that in which it is moved by the revolving
10 cam, substantially as and for the purposes
hereinbefore set forth.

3. The combination, with the spindle-driv-
ing and feed mechanisms, the drop-wire head,
drop-wires, and stop-motion cam, of the hori-

zontal spring-controlled shipping-lever, engag- 15
ing with one end the clutch of the spindle-
driving mechanism, and with the other the
feed mechanism and when released operating
laterally upon the drop-wire head to force the
same out of range of the stop-motion cam, sub- 20
stantially as hereinbefore shown and described.

In testimony whereof I have hereunto set
my hand this 24th day of October, 1881.

JAMES S. UTLEY.

Witnesses:

JOHN F. GRAHAM,
CHAS. E. RUSSELL.