

(No Model.)

2 Sheets—Sheet 1.

J. BOND & G. SMETHURST.

COP BUILDING MECHANISM.

No. 297,107.

Patented Apr. 22, 1884.

Fig. 1.

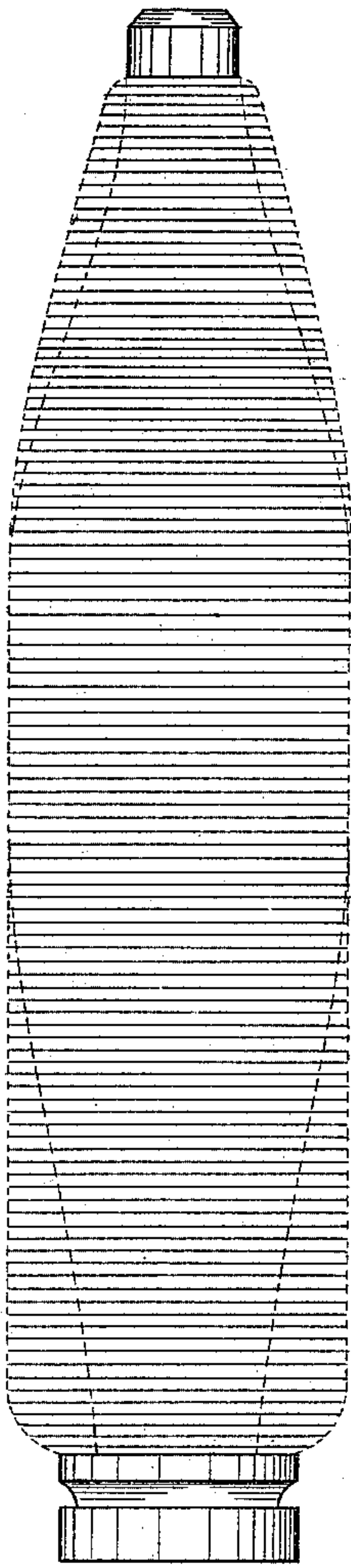
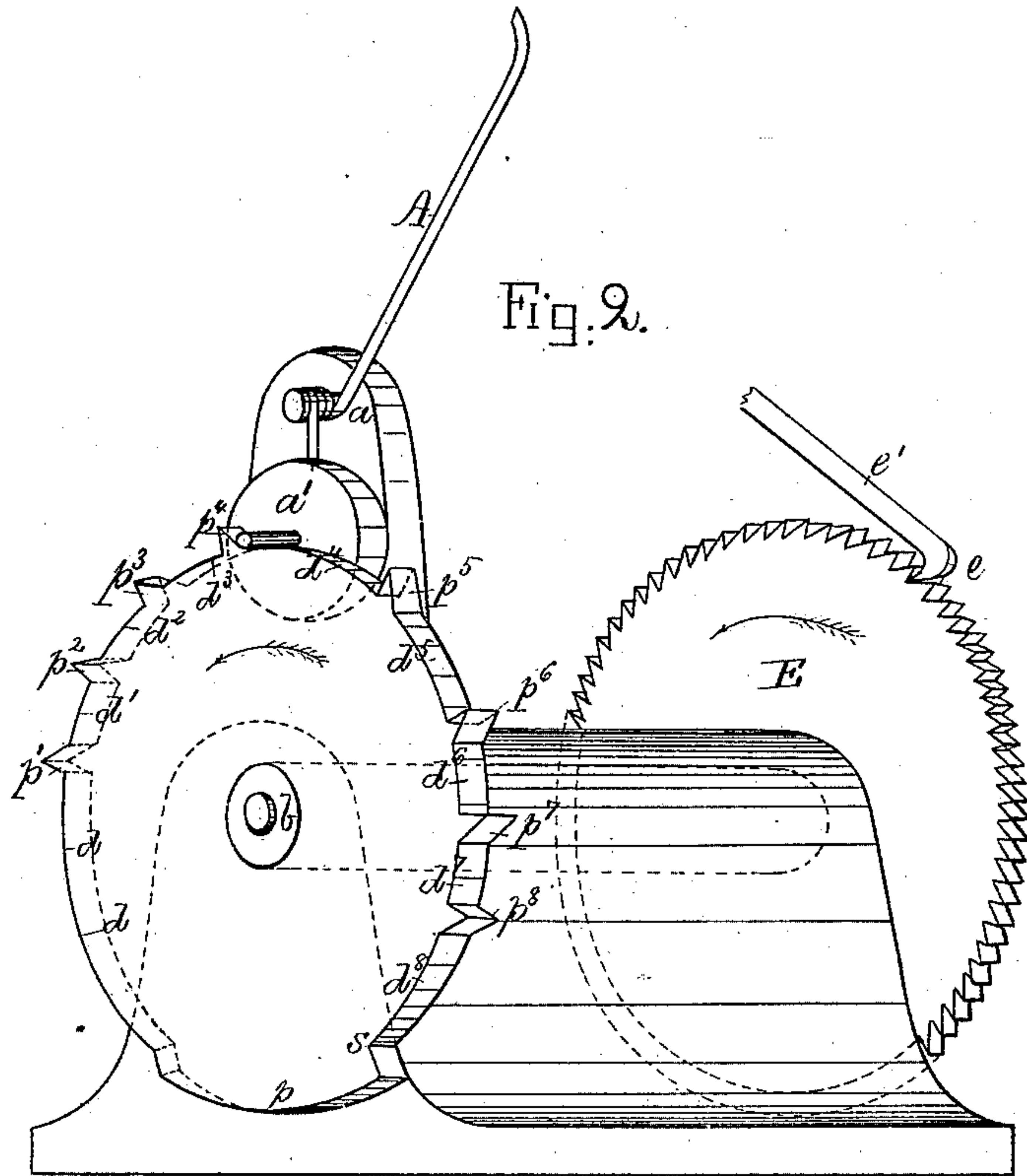


Fig. 2.



Witnesses.

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(No Model.)

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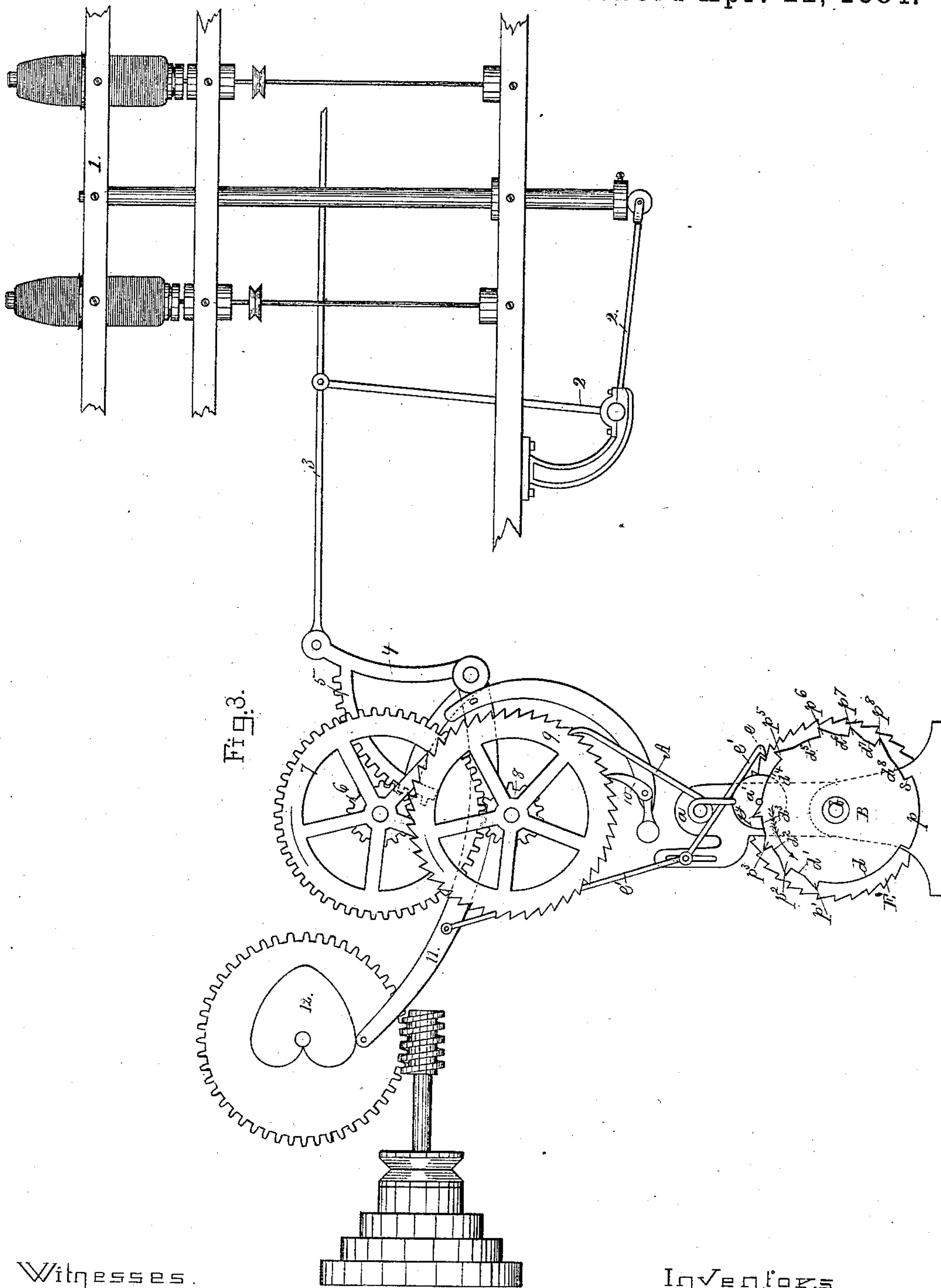


Fig. 3.

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# UNITED STATES PATENT OFFICE.

JOHN BOND AND GEORGE SMETHURST, OF MAYNARD, MASSACHUSETTS.

## COP-BUILDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 297,107, dated April 22, 1884.

Application filed March 23, 1883. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN BOND and GEORGE SMETHURST, both of Maynard, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Cop-Building Mechanism, of which the following is a specification.

Our invention relates to cop-building mechanism for spinning-machines, by means of which the laying of the yarn on the cop or bobbin is regulated.

The object of our invention is to provide means for varying the action of the ring-rail-operating mechanism to wind differently-shaped cops.

Our invention consists in mechanism adapted to be connected to and operated by the usual ring-rail-operating devices, and by means of which the movements of the ring-rail may be regulated to form cops or bobbins containing about one-fourth more yarn than those wound as heretofore.

In the accompanying drawings, Figure 1 is an elevation of a cop as wound when the movements of the ring-rail are controlled by the devices constituting our invention, the dotted lines showing the old form of cop. Fig. 2 is a perspective view of said devices, and Fig. 3 shows the general arrangement of the ring-rail-operating mechanism of a spinning-machine and one way of connecting our improvements thereto.

The devices which constitute our invention, and which form the subject of this application, are more particularly intended for use with the spinning-machine shown in Patent No. 87,877 to A. L. Sayles, dated March 16, 1869. In this machine a pawl acts to compel a ratchet-wheel to move a certain distance at each downstroke of a lever upon which the ratchet-wheel and a system of gears connecting the ratchet-wheel to the oscillating arms that support the ring-rail are mounted, so as to build the usual cop. The general arrangement of these parts is shown in Fig. 3 of the accompanying drawings, in which the pawl marked A performs the same function, when left free, as the pawl above referred to in the Sayles machine.

To build a cop such as shown in Fig. 1, containing one-fourth more yarn than the usual

cop, the ring-rail must repeat its stroke a given number of times at certain parts, and therefore the pawl A must not act at every downstroke of the lever of the building mechanism.

To control the pawl A, which is pivoted at *a* and provided with a weight, *a'*, to cause it to engage with the ratchet-wheel of the builder when left free to act, we provide a cam, B, properly shaped to move aside the weight *a'* when the pawl A should not act or when the ring-rail should repeat its stroke over the same part of the cop, and to release the weight at the times when the pawl should engage with the ratchet-wheel on the builder. The cam B is actuated by means of a ratchet-wheel, E, secured to the cam-shaft *b*. The ratchet-wheel E is operated by a pawl, *e*, connected by a rod, *e'*, to the lever 11 of the building mechanism. The pawl *e* moves over one tooth of the wheel E at every downstroke of the builder-lever, and turns the wheel E the distance of one tooth at every upstroke of that lever. It is evident that the cam B must move with the ratchet-wheel E, since they are both secured to the same shaft *b*, and that the pawl A cannot act when a projection on the cam B pushes back the weight *a'*, and consequently the yarn will be wound on the same part of the cop at each stroke of the ring-rail so long as the pawl A is held from acting on the builder. When the weight *a'* is released by the cam B, the pawl A is free to act, and, engaging with a tooth of the ratchet-wheel of the building mechanism, changes the position of the ring-rail. By properly timing and proportioning the ratchet-wheel E and cam B, a cop like that shown in Fig. 1, and containing one-fourth more yarn than the usual cop, is produced.

In Fig. 3 we have shown the general arrangement of so much of the parts of a Sayles spinning-machine above mentioned that operate the ring-rail, as is deemed necessary to show the operation and connection of our pawl-governing mechanism. The ring-rail 1, the oscillating arms 2, the rod 3, the arm 4, provided with the toothed segment 5, the system of gears 6, 7, and 8, ratchet-wheel 9, pawl 10, lever 11, and heart-cam 12 are all connected, supported, and operate in the same way as the corre-

sponding parts of the Sayles machine. The pawl A is rendered inoperative when any one of the projections  $p$  to  $p^8$  of the cam B is brought under its weighted end, and is let into action 5 when any one of the depressions  $d$  to  $d^8$  of the cam B allows the weighted end to fall.

It is obvious that in order to have the cam B make one revolution in winding a cop, the teeth of the ratchet-wheel E must be equal in 10 number to the number of strokes made by the lever 11.

We claim as our invention—

The combination, with the pawl A and mech-

anism for raising and lowering the ring-rail, of mechanism for controlling the pawl, adapted 15 to be connected to and operated by said rail-operating mechanism, whereby the stroke of the ring-rail is repeated and the yarn laid on the same part of the cop, as and for the purpose set forth.

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Witnesses:

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