(No Model.)

A. S. SPAULDING.

FLEXIBLE DOOR.

No. 520,089. Patented May 22, 1894.

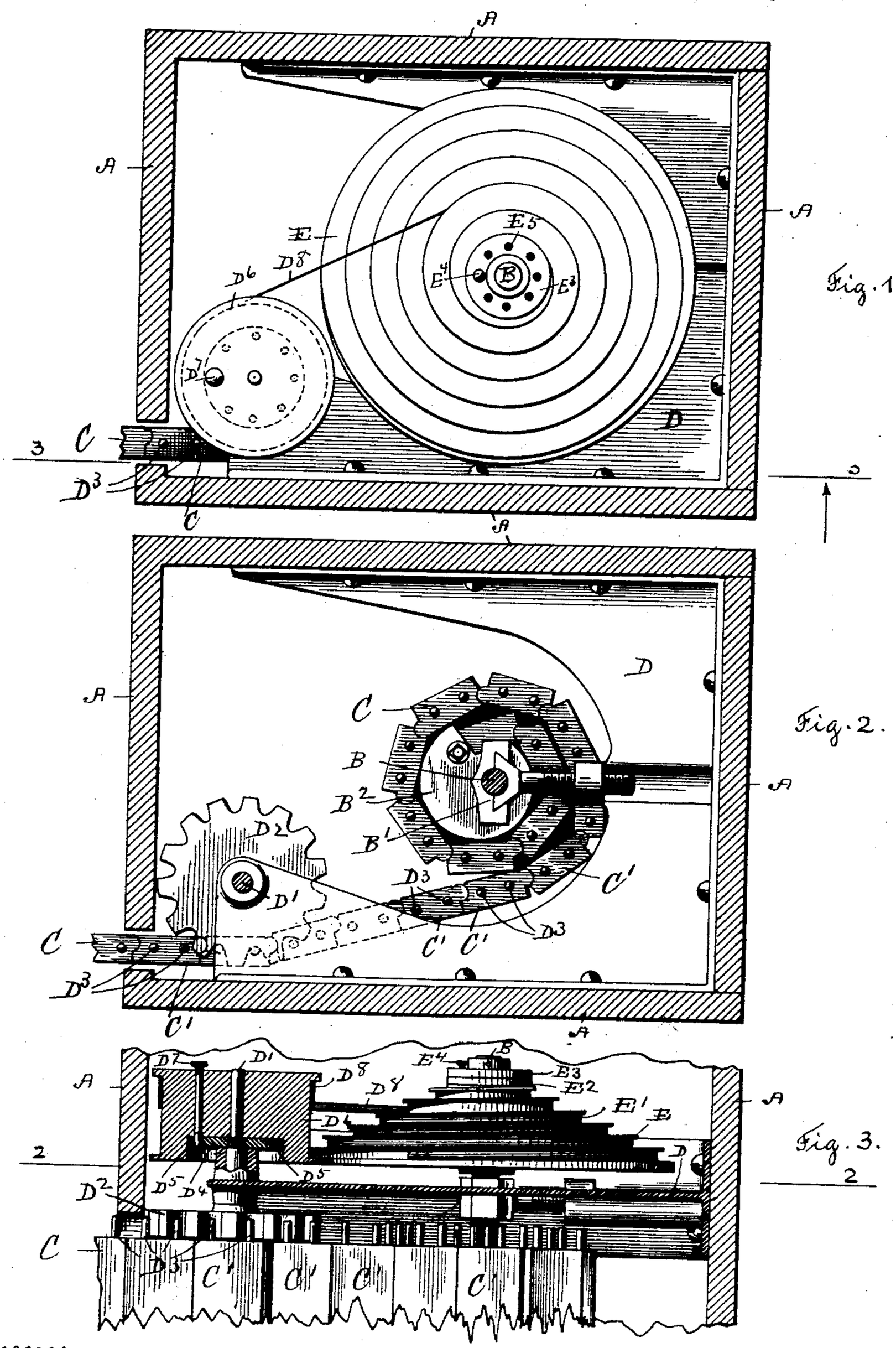

Fig. 1.

Fig. 2.

Fig. 3.

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Witnesses
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ALGENON S. SPAULDING, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE FLEXIBLE DOOR AND SHUTTER COMPANY, OF PORTLAND, MAINE.

FLEXIBLE DOOR.

SPECIFICATION forming part of Letters Patent No. 520,089, dated May 22, 1894.

Application filed October 25, 1892. Renewed October 26, 1893. Serial No. 489,234. (No model.)

To all whom it may concern:

Be it known that I, ALGENON S. SPAULDING, a citizen of the United States, and a resident of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Flexible Doors, of which the following is a specification, accompanied by drawings, forming a part of the same, and in which—

Figure 1 is a top view of the operating mechanism by which the door is wound. Fig. 2 is a top view of the door, partially wound upon its spindle, the helical drum and winding spool represented in Fig. 1, having been removed, on line 2, 2, Fig. 3; and Fig. 3 is a side and sectional view on line 3, 3, Fig. 1, and showing a portion of the flexible door.

Similar letters refer to similar parts in the different figures.

My invention relates to the connected operative mechanism by which a flexible door is wound into a coil and about a vertically rotating spindle, and it consists in providing means by which the spindle is rotated and the door wound up as it is moved laterally in the process of opening the door.

A denotes the casing inclosing the pocket within which the door is wound.

B denotes a vertical spindle journaled in a step, or other suitable bearing at its lower end and in the bearing B′ at its upper end. Collars, one of which is shown at B^2, Fig. 2 are attached to the spindle B and to these collars one edge of the flexible door is connected, so as to be wound into a coil as the spindle is rotated, a portion of the flexible door is shown, in end view, at C, Figs. 2 and 3 and may be of any known form of construction, but which is represented in the accompanying drawings as composed of a series of parallel strips, or leaves, C′, C′, preferably of wood, and hinged together at their edges. The upper bearing B′ of the spindle B is conveniently held by a cast-iron frame D, in which is journaled a spindle D′ to the lower end of which is attached a gear-wheel D^2, which is engaged by and rotated by the pins D^3 held in and projecting above the upper ends of the leaves C′ of the flexible door, so that as the door is moved past the gear, it will be rotated. Attached to the spindle D′ is a disk D^4, provided with a series of concentric holes D^5, two being shown in Fig. 3.

D^6 denotes a spool loose upon the spindle D′, but connected with the disk D^4 by means of the pin D^7.

Attached to the upper end of the spindle B is a helical drum E provided with a spiral groove E′ and the spool D^6 and helical drum E are connected by a flexible connection D^8 preferably a steel band, or ribbon, attached at its opposite ends to the spool and drum. The helical drum is attached to the spindle by means of a disk E^2 fastened to the drum and a disk E^3 attached to the spindle, the former having a hole to receive the end of the pin E^4, which is held in one of the series of concentric holes E^5. This method of connecting the drum with its spindle and the spool with its spindle, as described, allows each to be adjusted and the steel band D^8 drawn taut, and the door wound closely around the spindle B. As the door is pushed into the pocket, in the operation of opening the door, the gear and spool D^6 will be rotated to wind up the steel band D^8 and unwind it from the helical drum, causing the spindle B to be rotated and the door C wound up, and when the door is opened the action will be reversed and the steel band D^8 wound upon the helical drum E and delivered from the spool D^6. The pitch of the helical drum, is made to correspond with the varying size of the coil as the door is wound, so the door will be taken up at the same rate of speed, at which the steel band is delivered from the helical drum, and the size of the gear D^2 and spool D^6 should be so adjusted as to cause the door to be taken up, as fast as it is delivered to the spindle B as the door is opened.

I do not confine myself to the specific means, as shown and described, by which the spool D^6 and drum E are adjustably connected to their respective spindles, as any known means may be employed for that purpose.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a rotating spindle, a flexible door, with one edge connected with said spindle and provided with a series of

projecting pins, or teeth, a helical drum carried by said spindle, a gear, with its axis parallel with said spindle, said gear being engaged by the pins in said door, a spool rotated by said gear and a flexible connection between said spool and said drum, whereby said spindle is rotated and the door wound up by the lateral movement of said door, substantially as described.

2. The combination of the spindle B, helical drum E, adjustably connected with said spindle, flexible door provided with projecting teeth, or pins, and connected with said spindle, a gear actuated by the teeth, or pins, on said door as it is moved laterally, a winding spool connected with said gear and a flexible connection between said spool and said drum, substantially as described.

3. The combination of a spindle, a flexible door connected with said spindle, a helical drum carried by said spindle, a gear actuated by the lateral movement of said door, as described, a spindle carrying said gear, a spool adjustably connected with said spindle and a flexible connection between said spool and said drum, substantially as described.

Dated this 21st day of October, 1892.

ALGENON S. SPAULDING.

Witnesses:
RUFUS B. FOWLER,
EMMA KESTER.