(No Model.) 2 Sheets—Sheet 1.

L. S. CRANDALL.

TYPE WRITING MACHINE.

No. 509,795. Patented Nov. 28, 1893.

Fig. 1

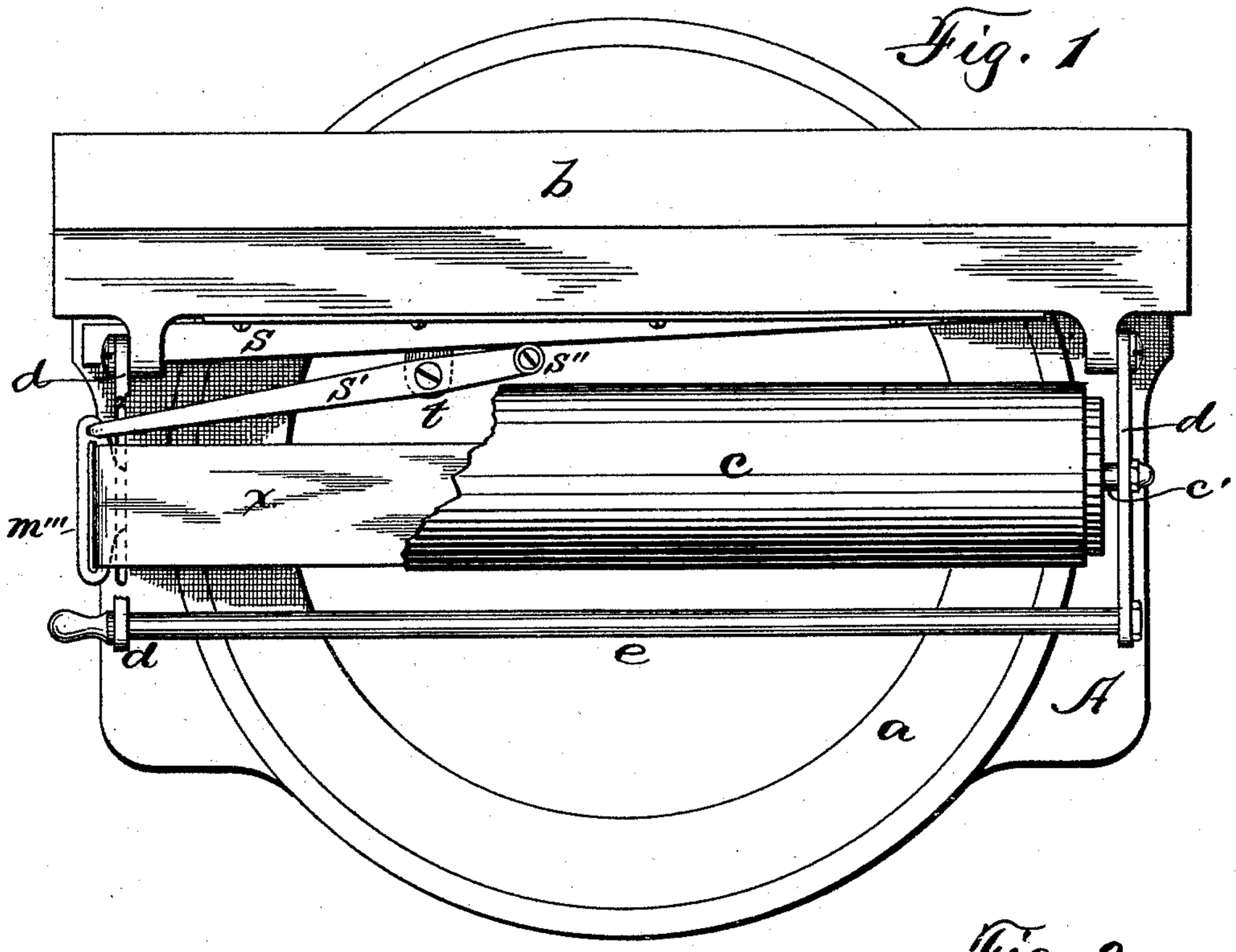

Fig. 2.

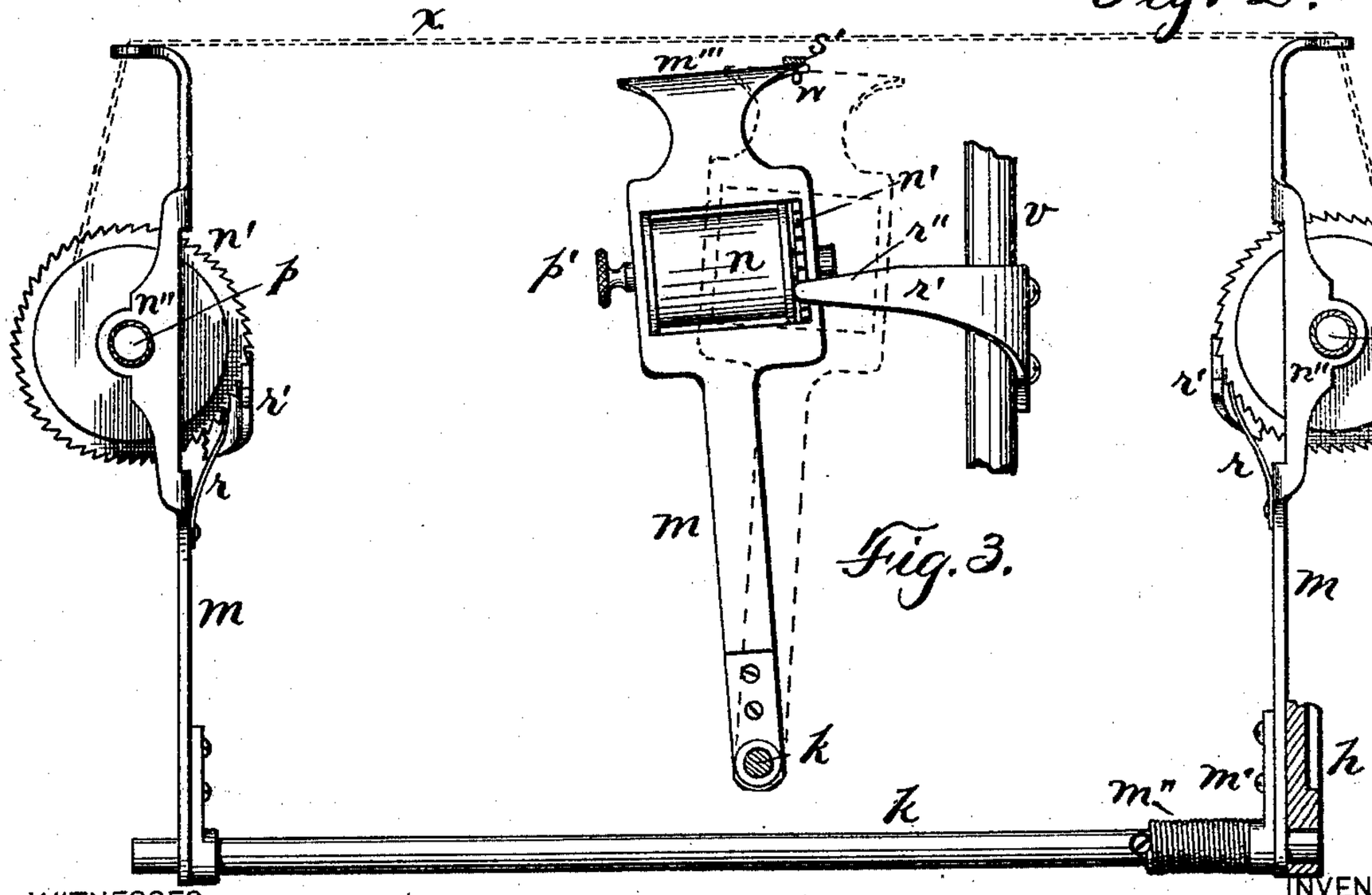

Fig. 3.

WITNESSES:

H. A. Earhart

C. B. Kinnie

INVENTOR

Lucien S. Crandall,

By Smith & Benson

ATTORNEYS.

THE NATIONAL LITHOGRAPHING COMPANY.
WASHINGTON, D. C.

(No Model.)

2 Sheets—Sheet 2.

L. S. CRANDALL.

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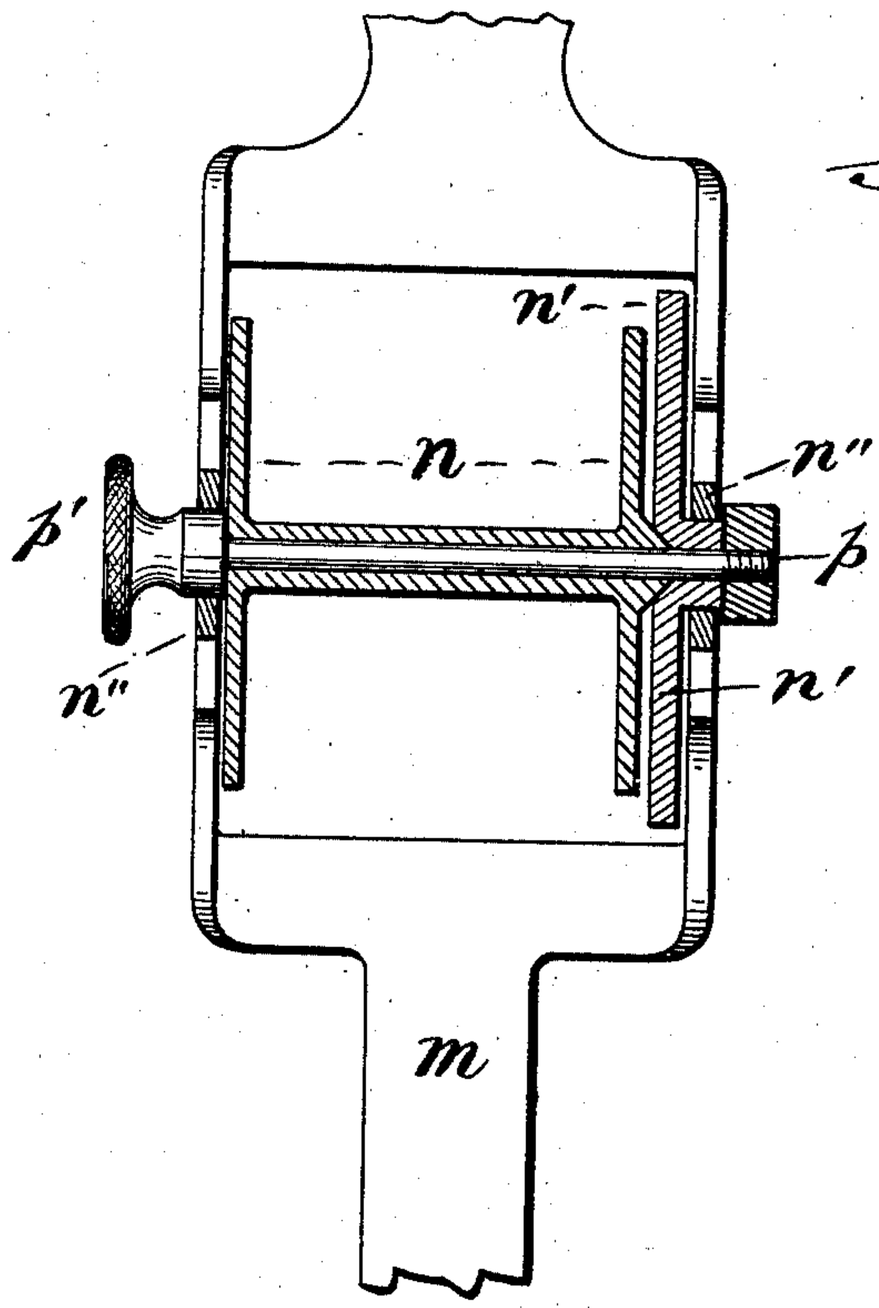

Fig. 4

WITNESSES:

C. B. Kinnie

D. May Goodrich.

INVENTOR

Lucien S. Crandall

By Smith & Denison

his ATTORNEYS.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LUCIEN S. CRANDALL, OF PARISH, ASSIGNOR TO WILLIAM A. SWEET, OF SYRACUSE, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 509,795, dated November 28, 1893.

Application filed January 21, 1893. Serial No. 459,060. (No model.)

To all whom it may concern:

Be it known that I, LUCIEN S. CRANDALL, of Parish, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Type-Writing Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to type-writers and particularly to the ribbon-feed mechanism therein.

My object is to provide a novel ribbon-feed mechanism, adapted to feed the ribbon longitudinally and at the same time laterally, so that the printing line will be directly across and also longitudinal to the ribbon, comprising a rocking frame carrying the ribbon spools, a cam-actuated lever engaging with said frame to rock it one way, a spring to return it back to the front, as it is gradually released to return by said cam-actuated lever, a stationary cam with which the ratchet upon the ribbon spool engages to rotate the spool as the frame is swung, to wind the ribbon thereon, and means to regulate the tension of the spool upon its arbor, and to connect and disconnect it from the ratchet wheel by which it is rotated.

My invention consists in the several novel features of construction and operation hereinafter described and which are specifically set forth in the claims hereunto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1, is a top plan view of a type-writer carriage, and top plate, part of the platen and its frame being broken away. Fig. 2, is a front elevation of the frame carrying the ribbon-spools, the ribbon being indicated by the dotted lines, and also showing one of its journals in the main frame of the machine. Fig. 3, is an elevation of one end of the spool frame, a spool mounted therein, the cam finger which engages with the spool ratchet, to rotate the spool, and indicating the rock or swing of the spool frame by the dotted lines. Fig. 4, is a vertical sectional elevation of the ribbon spool, ratchet wheel and frame showing the means for securing frictional contact between the wheel and frame.

A, is the top plate of the machine; —*a*— the type-bar ring; —*b*— the rear of the carriage frame; —*c*— the platen; —*c'*— its axis or arbor; —*d*—*d*— the side bars of the platen-frame hinged at the rear to the carriage body; and —*e*— the front rod of the platen frame; all of these parts being of any desired construction, and not herein more specifically described, as they form no part of this invention.

At —*h*— (Fig. 2) I show part of one side of the main-frame of a type-writer, in which the rock shaft —*k*— is journaled, the other end being journaled in like manner in the opposite side of said main frame, and *m*—*m*— are vertical arms, both of which are secured to said shaft, and to a bracket —*m'*— or said brackets may be omitted and a spring —*m''*—, one end of which is secured to said bracket or to said shaft and the other to the frame —*h*—. Each arm is mortised to receive a ribbon-spool —*n*—, on which the ribbon —*x*— is wound, and its driving ratchet —*n'*—, and provided with ears —*n''*— on opposite sides in which the spool shafts —*p*— are journaled, said ratchet being loose upon its shaft; and —*p'*— being a thumb-screw upon the end of the spool shaft, by the operation of which, said ratchet is forced tightly into frictional contact with its spool so that they rotate together, or released entirely so that the spool and ratchet rotate independently with such adjustable proper ribbon tension upon the spool from which it is being wound. A pawl —*r*— engages with each ratchet wheel to prevent its backward rotation. Each ratchet wheel when loose and also when tightened against the spool is rotated by an arm —*r'*— having a cam-face —*r''*— secured upon one of the posts —*v*— which support the top-plate of the machine, in such manner that the cam-face engages a tooth of said ratchet and then, as the spool frame swings, said tooth riding on said cam-face, the spool is rotated one tooth, and as the frame returns, said arm comes into engagement with the next tooth, said arm having sufficient spring action to snap from one tooth to another. A strip or bar —*s*— of metal having an inclined or cam-face is secured upon the carriage and is carried with it; and —*s'*— is a lever pivoted upon a bracket —*t*— secured upon the top-

plate of the machine, and having on one arm an anti-friction roller —*s''*— in engagement with the cam-face of said bar —*s*—; and the other arm provided with a pin —*w*— which passes through a hole in the table extension —*m'''*— creating a pivotal connection, and so that when the carriage travels to the right in Fig. 1, said lever is operated to rock or swing the spool frame, and then when the travel of the carriage is reversed the tension of the spring —*m''*— throws this frame back again. To reverse the ribbon the thumb-screw on one spool-shaft is loosened releasing the ratchet wheel, and the other is tightened up, so that that spool and ratchet wheel are rotated as one, while the other ratchet wheel rotates as an idler, either wholly out of contact with its spool, or in such frictional contact as to retard the rotation of the spool, according to the amount of ribbon tension desired.

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

1. In a type-writer, a swinging spool frame, a lever connected thereto, and a cam upon the carriage with which the lever engages; in combination.

2. In a type-writer, a swinging spool frame, a lever connected thereto, a cam upon the carriage with which the lever engages, and a spring engaging with said frame to return it to its starting point; in combination.

3. The combination with a ribbon spool and its ratchet in adjustable friction engagement therewith, of a cam arm engaging with said ratchet to rotate it and the spool.

4. The combination with a type-writer carriage, and a cam thereon, of a rocking ribbon-spool frame and a lever connected to said frame and actuated by said cam.

5. The combination with a type-writer carriage, and a cam thereon, of a rocking frame, a lever connected thereto and actuated by said cam, ribbon spools provided with ratchets and mounted in said frame, and cam arms engaging with said ratchets.

In witness whereof I have hereunto set my hand this 24th day of December, 1892.

LUCIEN S. CRANDALL.

In presence of—
C. W. SMITH,
HOWARD P. DENISON.