

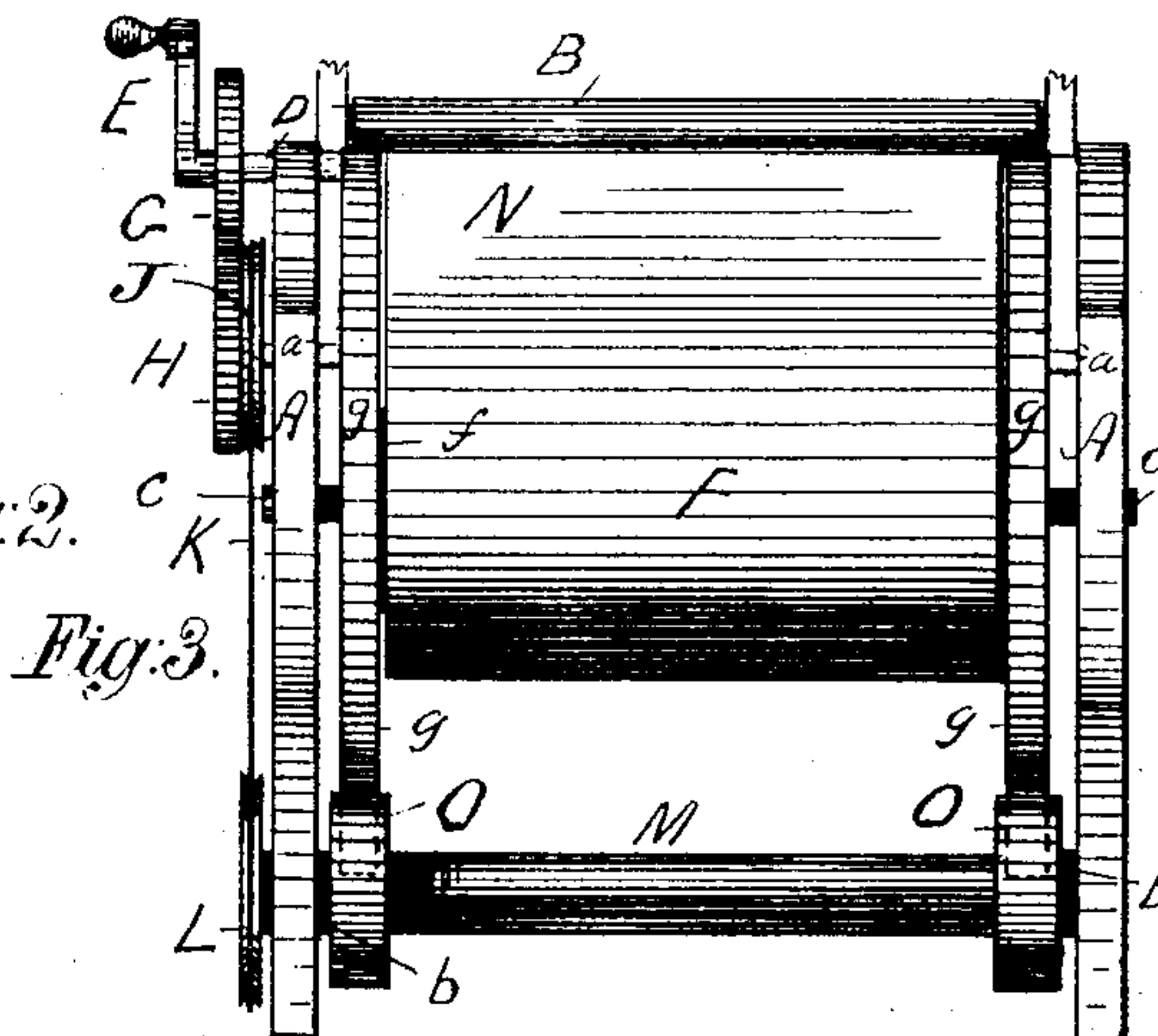
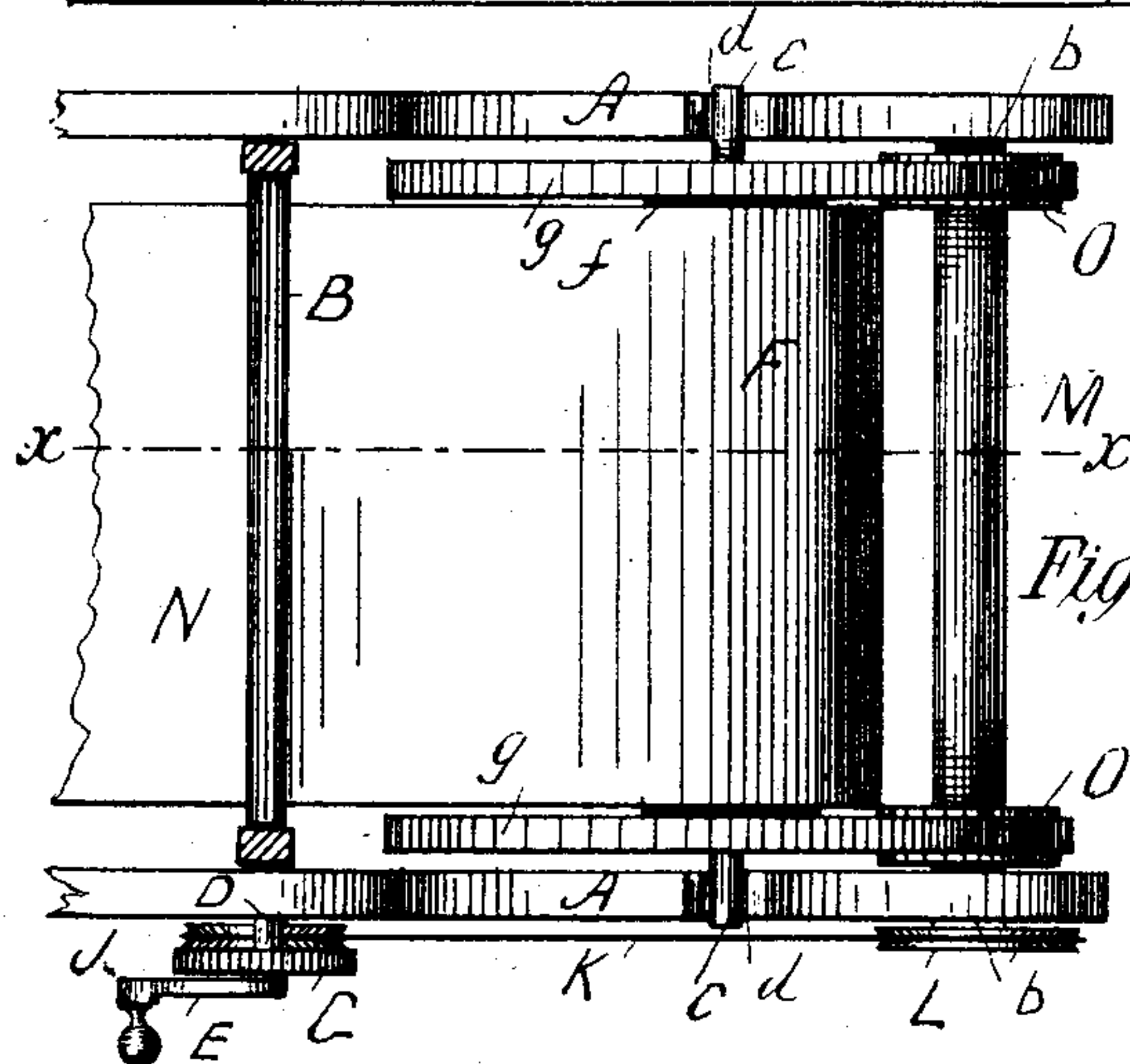
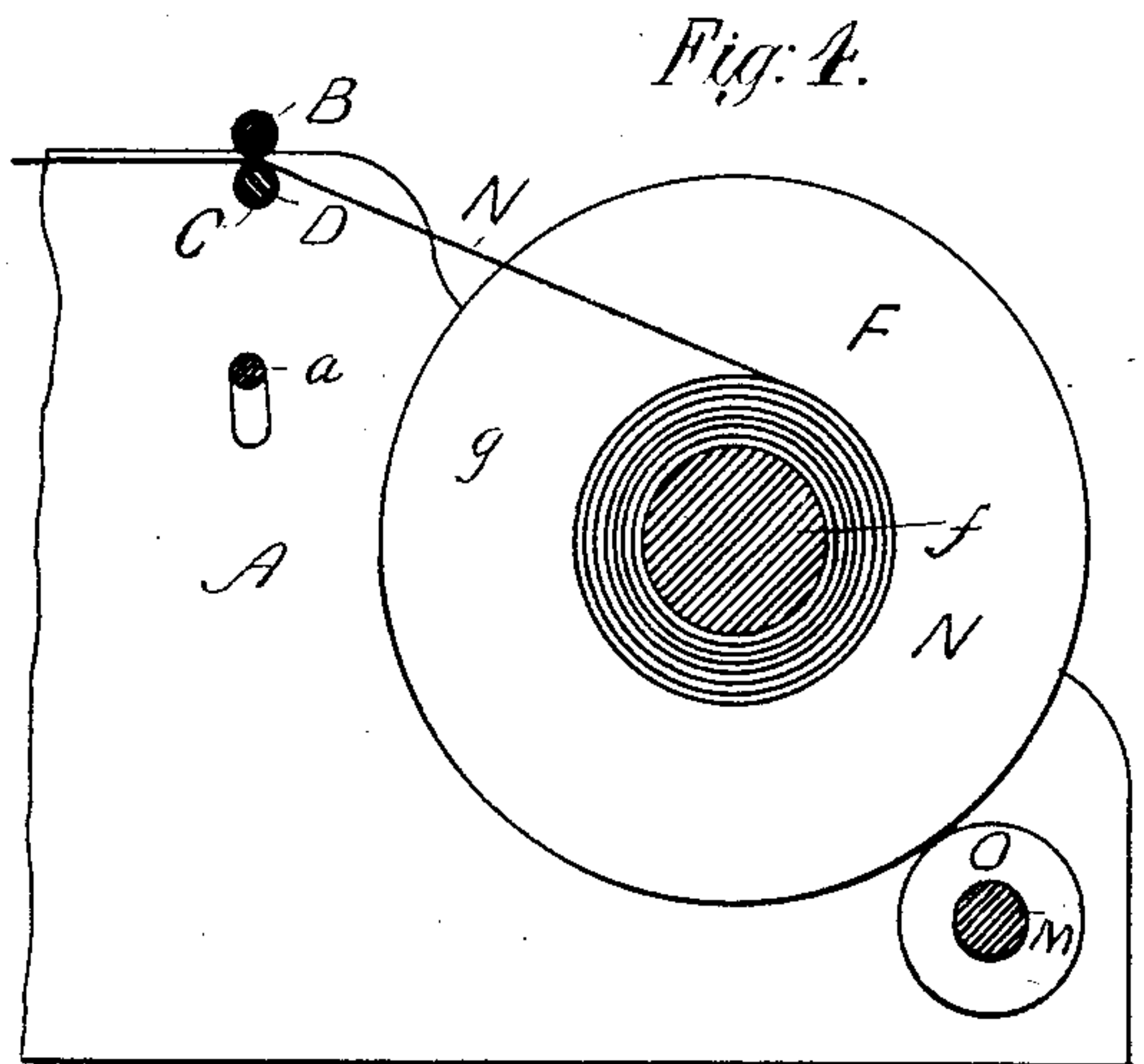
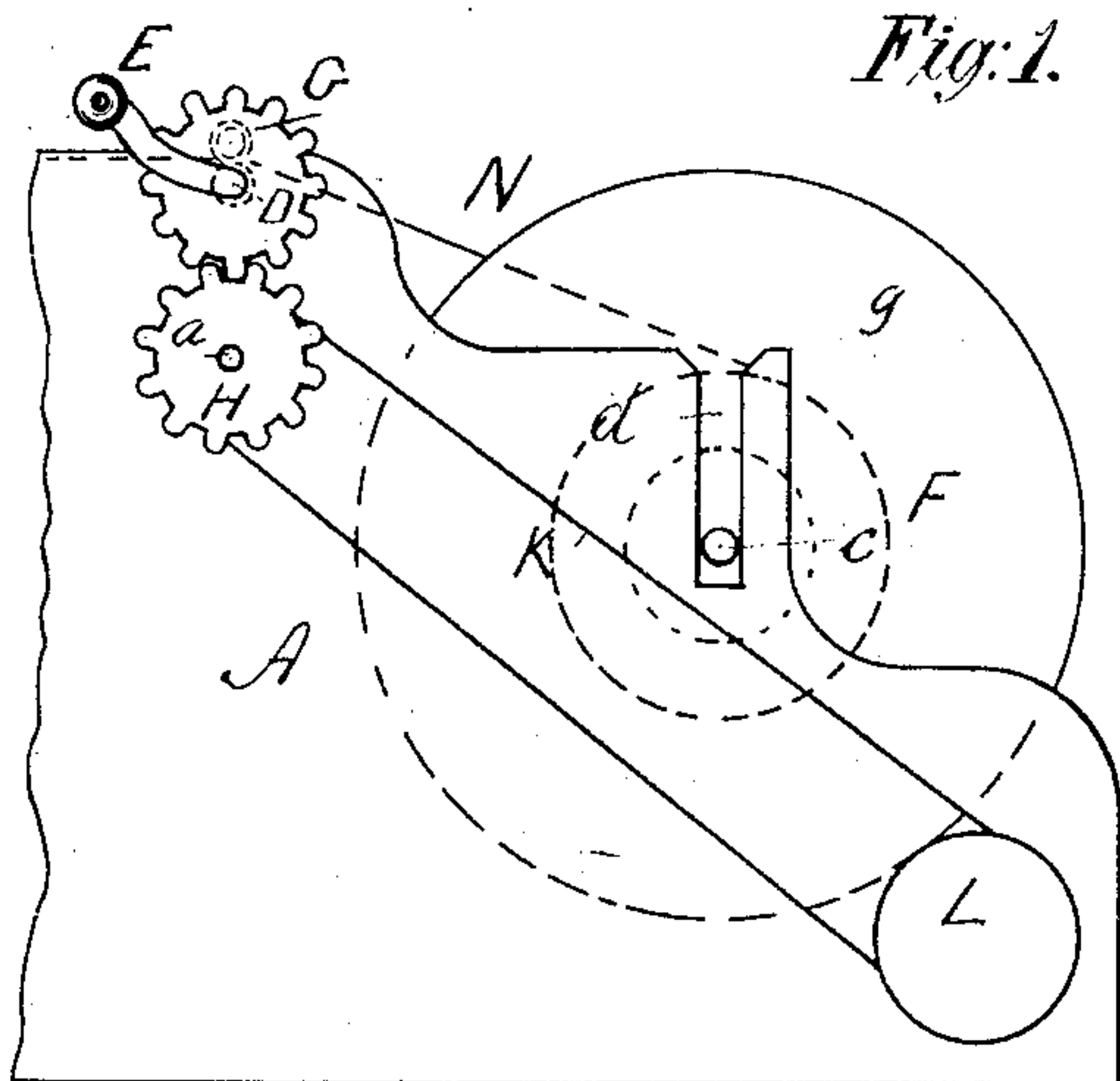
(No Model.)

O. H. ARNO.

MECHANICAL MUSICAL INSTRUMENT.

No. 245,426.

Patented Aug. 9, 1881.



Witnesses:

Wm B. Bellows,  
John Vase

Oliver H. Arno,  
Inventor

Per Brown Bros.  
Attorneys—

# UNITED STATES PATENT OFFICE.

OLIVER H. ARNO, OF WILMINGTON, ASSIGNOR TO AMERICAN AUTOMATIC ORGAN COMPANY, OF BOSTON, MASSACHUSETTS.

## MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 245,426, dated August 9, 1881.

Application filed September 3, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, OLIVER H. ARNO, of Wilmington, in the county of Middlesex and State of Massachusetts, have invented certain  
5 new and useful Improvements in Mechanical Musical Instruments, of which the following is a full, clear, and exact description.

This invention relates to mechanical musical instruments which are operated by a perforated  
10 sheet of paper or other suitable material.

Usually in the operation of such instruments two rolls are used for the sheet material, one on which it is wound previous to being run through the instrument, and from which it is  
15 unwound in the operation of the instrument, and called the "music-roll," and the other, on which the sheet material is wound during the operation of the instrument, called the "take-up roll."

This invention is illustrated in the accompanying drawings, in which Figure 1 is an end view of a take-up roll and feed-rolls of a mechanical musical instrument having this invention attached thereto. Fig. 2 is a plan view;  
20 Fig. 3, a view in end elevation, and Fig. 4 a vertical section on line *x x*, Fig. 2.

In the drawings, A represents a frame-work supporting and carrying the various parts; B and C, two feed-rolls, the shaft D of the one, C, being the driving-shaft and operated by the  
30 crank-arm E, or in any suitable manner; F, the take-up roll.

The feed-rolls B and C and the take-up roll F are constructed as usual for such rolls in mechanical musical instruments, the perforated  
35 sheet N being fed by the feed-rolls through the instrument and then wound upon the take-up roll.

On the driving-shaft D is a gear-wheel, G, which gear-wheel engages with another similar gear-wheel, H, below it.  
40

On the shaft *a* of the gear-wheel H is a pulley, J, which pulley is connected by a belt, K, to another pulley, L, on a horizontal shaft, M, turning on its journals *b* in the frame A.  
45

The take-up roll F turns by its journals *c* in the vertical slots *d* in the frame A, and is composed of a spindle, *f*, having on each end a circular flange or rim, *g*.

The music-sheet N is attached by one end to  
50 the spindle *f*, and in the operation of the instrument the take-up roll is turned, and as it turns the music-sheet is wound on the spindle between the flanges or rims *g*.

On the shaft M are two bands or rings, O,  
55 of india-rubber or any suitable elastic material.

The take-up roll when in position in the instrument, its journals in the slots *d*, rests by its flanges *g* on the elastic rings or bands O of the shaft M, so that by turning this shaft the take-  
60 up roll, through the friction of the elastic rings O, will be turned and the sheet material wound thereon. Turning the driving-shaft operates the feed-rolls and feeds the music-sheet through the instrument, and by the gear and belt con-  
65 nection herein described the shaft M is revolved, and through the frictional contact of the flanges of the take-up roll on the elastic rings O the take-up roll is caused to turn and the music-sheet wound thereon. As the perforated sheet  
70 material winds upon the take-up roll, as above described, in the operation of the instrument, the said sheet material increases in thickness and diameter on the spindle *f*, and such increase causes the sheet material to travel faster  
75 from the feed-rolls than the feed-rolls deliver it, and in such case the sheet material must either break or be pulled through the feed-rolls or stop the instrument; and to obviate such troubles is the object of the present in-  
80 vention, and which is accomplished as follows:

In the operation of the instrument, as the sheet material between the feed-rolls and the take-up roll becomes taut, by reason of the winding of it faster on the take-up roll than delivered by the feed-rolls, such tautness will cause  
85 the take-up roll to rise from its bearing on the frictional driving-bands O, freeing and disconnecting itself therefrom, which movement is allowed by the journals *c* of the take-up roll being  
90 located and turning in the slots *d*, obviously stopping the turning of the take-up roll, and consequently cease the winding of the sheet material thereon until a sufficient length of the sheet material is delivered from the feed-rolls  
95 to allow the take-up roll to fall and rest upon the frictional bands O again, when it will again be turned and the music-sheet wound thereon



again, and so on until the whole length of sheet material is wound on the take-up roll, as desired.

5 The roll can be raised from its bearings on the frictional bands for the purpose of unwinding the sheet material therefrom in any manner desired.

10 In lieu of having the slots *d* for the journals of the take-up roll in a vertical line, as shown, they can be inclined in either direction and accomplish like results.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

15 1. In a mechanical musical instrument adapted to be operated by a perforated music-sheet, the combination of a roll for taking up said sheet, a friction-roller on which the take-up roll normally rests, and by which it is rotated  
20 through suitable mechanism, said take-up being capable of rising in its bearing and freeing itself from the friction-roller by the action of the music-sheet, substantially as described.

25 2. In a mechanical musical instrument adapted to be operated by a sheet of perforated material, the combination of a take-up roll adapted to rise in its bearings, and having an annular flange at one end, a transverse shaft arranged below the take-up shaft, and provided  
30 with an annular friction-roller, on which the flange of the take-up roll bears and by which it is to be rotated, and a driving mechanism

for rotating the shaft carrying the friction-roller, all substantially as described, for the purposes set forth.

35 3. The combination of the rollers for feeding the perforated sheet, the take-up roll adapted to rise in its bearings, and provided with an annular end flange, a shaft arranged below said take-up roll, and provided with an annular elastic friction-roller, on which the end flange of the take-up roll rests and by which  
40 it is rotated, and mechanism connecting one of the feeding-rollers with the shaft of the friction-roller, substantially as described, and for the purpose set forth.

4. In a mechanical musical instrument adapted to be operated by a sheet of perforated material, the combination of a friction-roll, O, arranged on a shaft, M, a pulley, L, at one end  
50 of said shaft, a belt, K, a pulley, J, on the shaft of one of the feeding-rollers, and a take-up roll resting on the friction-roll and adapted to be automatically raised from contact therewith by the action of the music-sheet, all substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

OLIVER H. ARNO.

Witnesses:

EDWIN W. BROWN,  
WM. S. BELLOWS.