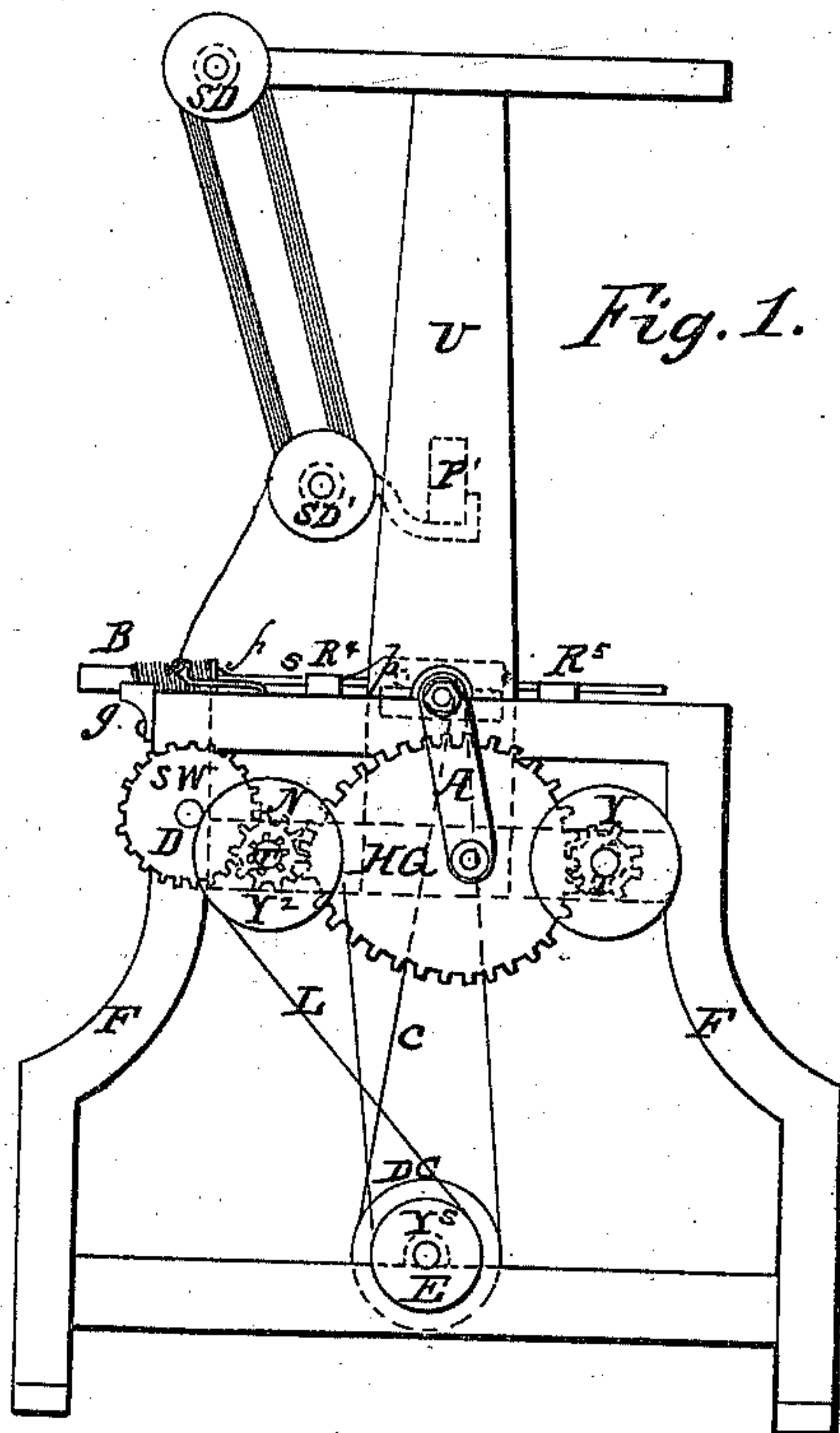


*F. H. Morrill.*

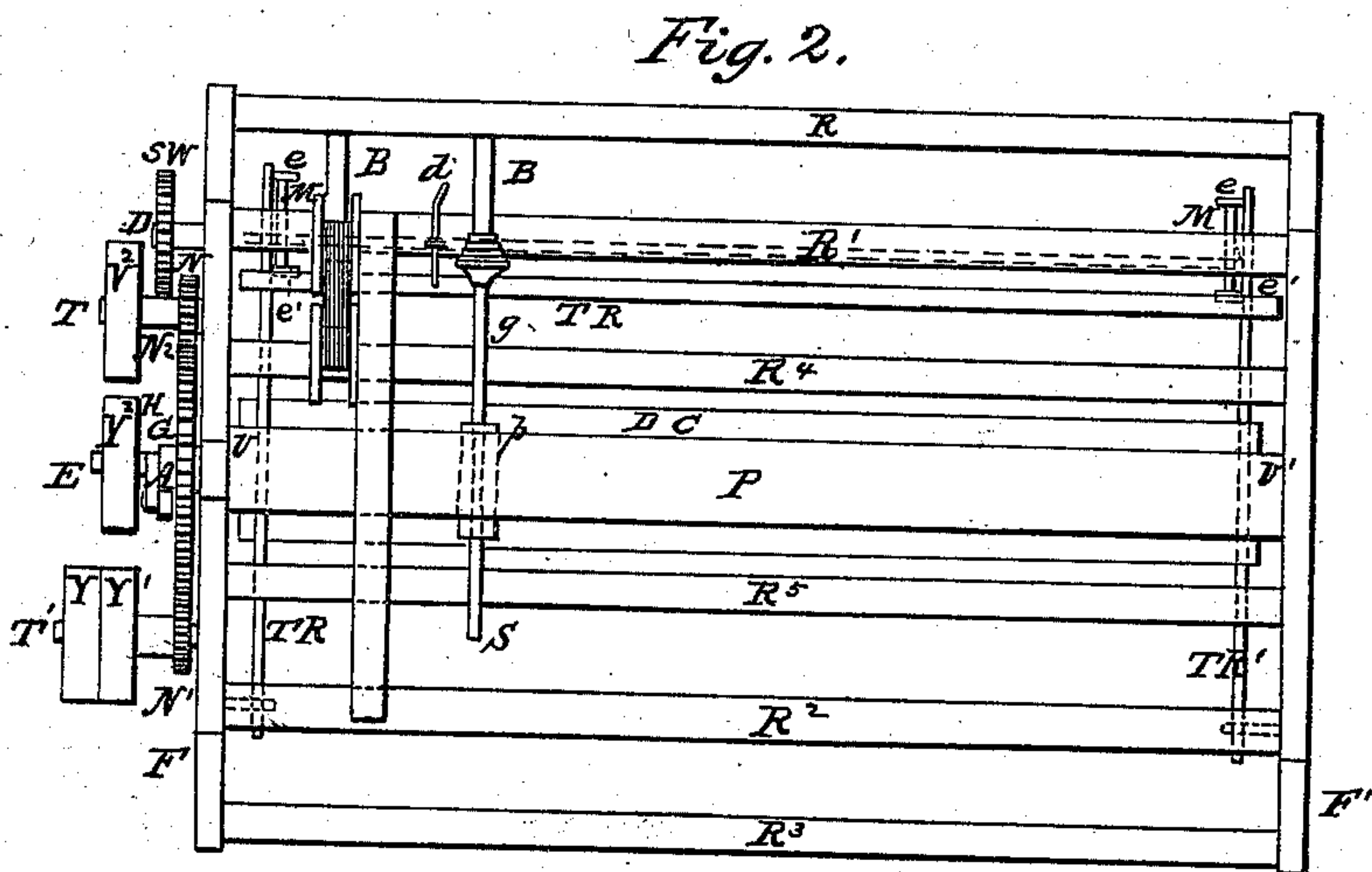
*Winding Bobbin.*

*N<sup>o</sup> 95,034.*

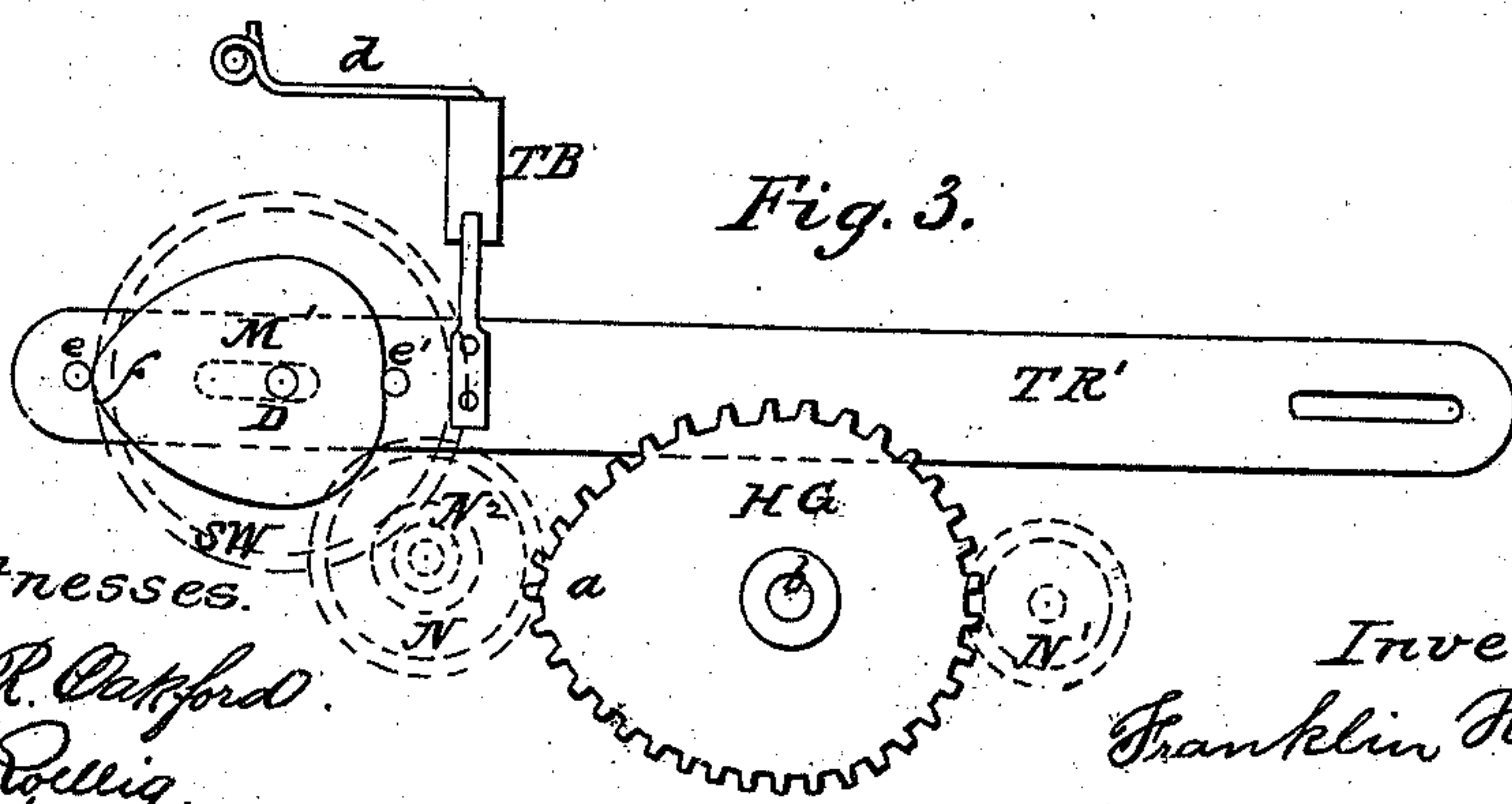
*Patented Sept. 21, 1869.*



*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

*Witnesses.*  
*Isaac R. Catford.*  
*Henry Collig.*

*Inventor.*  
*Franklin H. Morrill.*



# United States Patent Office.

FRANKLIN H. MORRILL, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 95,034, dated September 21, 1869.

## IMPROVEMENT IN MACHINE FOR WINDING BOBBINS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, FRANKLIN H. MORRILL, of Philadelphia, in the county of Philadelphia, and State of Pennsylvania, have invented a new and useful "Improvement in Bobbin-Frames;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of my invention is to construct a bobbin-frame so that I am enabled to produce a variable motion of the bobbins, and thus allow the yarn to pass on to the bobbins at the same speed when it is traversing from the small on to the large part of the cone thereof.

To accomplish this, I use a heart-shaped gear, applied to a swinging arm, and located between two pinions, by one of which it is driven, and to the other of which it imparts a variable rotary motion.

Figure 1 is an end elevation of a bobbin-frame, with my improvement applied.

Figure 2 is a plan view of same.

Figure 3 is a detached view of the heart-shaped gear and portion of the traverse-motion.

To enable those skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

The ends F and F' of the framing are made of any suitable material, and in the form as shown in fig. 1.

Said ends are connected together by means of the rails R, R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup>.

Secured at the centre, and on the inner side of the ends F and F', are two uprights, V and V', which are braced by means of pieces P and P'.

On top of the piece P, are placed one or more cross-pieces, to the ends of which are pivoted skein-drums S D.

Underneath, and secured to the piece P', are jointed arms, having pivoted on their ends skein-drums S D'.

Between the rails R<sup>1</sup> and R<sup>2</sup>, and at a proper distance apart, are two bearing-rails, R<sup>4</sup> and R<sup>5</sup>.

Placed upon said rails, and directly on a line with the skein-drums S D and S D', are one or more spindles, S, on which are secured pulleys p, over which are passed belts or cords C.

On either end of the spindles S, are placed bobbins B, of ordinary construction.

The ends of said bobbins rest in guides or supports g, secured to the side of the rails R<sup>1</sup> or R<sup>2</sup>.

Working in bearings secured in the centre, and at the lower part of the framing, is a shaft, E, to which is secured a driving-cylinder, D C, which communicates motion to the spindles S, by means of the belt or cord C.

On the end F of the framing, and suspended from

the top and centre of the same, by means of the vibrating arm A, is a heart-shaped gear, H G.

On the opposite sides of the said gear, and secured in the framing, are two studs, T and T', on which work pinions N and N', having projecting tubes formed on one side of them, which encircle and revolve on the studs.

The tube on the stud T' is provided with fast and loose pulleys Y and Y<sup>1</sup>.

The tube on the stud T is also provided with a pulley, Y<sup>2</sup>, a twisted belt, L, passing over it and around a pulley, Y<sup>3</sup>, secured to the end of the shaft E of the driving-cylinder D C.

On the stud T, and on one side of the pinion N, is placed a small pinion, N<sup>2</sup>, which gears with the spur-wheel S W, the said wheel being secured to the end of the shaft D, which works in bearings in the ends F and F' of the framing, and runs parallel to and immediately below the rail R<sup>1</sup>.

On the inner side of the ends F and F', are placed two traversing-bars, T R and T R', the said bars having a rectangular slot formed near each of their ends, through one of which the shaft D passes, and the opposite ends work on pins, secured to the inner side of the framing.

On each side of the openings through which the shaft D passes, are secured projecting pins e and e', between which work the heart-shaped cams M and M', said cams being secured to the shaft D.

A short distance above the upper edge of the bars T R and T R', and secured to them by means of rods, is a traversing-rail, T B, having secured on its upper edge, and alongside of each bobbin, a guide, d.

### Operation.

Motion is given to the pulley Y<sup>1</sup>, which turns the heart-shaped gear H G, through the pinion N<sup>1</sup>.

When the point a of the gear H G touches the pinion N on a horizontal line, the leverage will be greater between the pinion and the point b, from where the gear H G is suspended, and less between the pinion N<sup>1</sup> and the point b of the gear, consequently pinion N will be driven with a greater velocity.

The yarn from the skein is now passing on to the small part of the bobbin, and the heart-shaped gear H G and the cams M and M' will assume the position as shown in fig. 3.

When the point a of the gear H G has reached the pinion N<sup>1</sup>, the leverage being greater, and less between the pinion N and the point b of the gear, the speed of the pinion N will be less; and as the yarn is now passing on to the cone-part of the bobbin, and having a larger circumference to travel, the speed must necessarily be slower.

It will be obvious from the above method of regulating the speed of the bobbins, that the yarn will be wound upon them in a regular manner, consequently the liability of the yarn twisting and breaking will be prevented.

Having thus described my invention, its construction, and operation,

What I claim, and desire to secure by Letters Patent of the United States, is—

The arrangement of the heart-shaped gear H G,

arm A, and pinions N and N<sup>1</sup>, for the purpose of giving a variable rotary motion to the bobbins B, substantially in the manner and for the purpose specified.

In testimony whereof, I have hereunto signed my name, in the presence of two subscribing witnesses.

FRANKLIN H. MORRILL.

Witnesses:

ISAAC R. OAKFORD,  
HENRY ROELLIG.