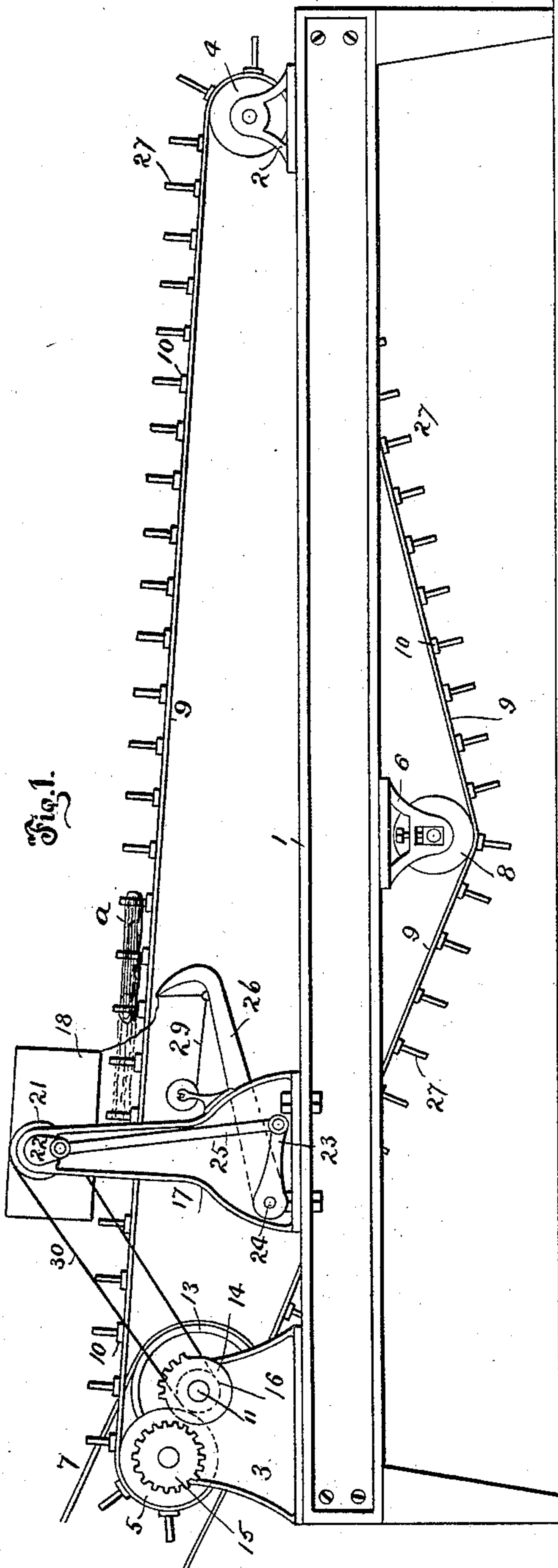


(No Model.)

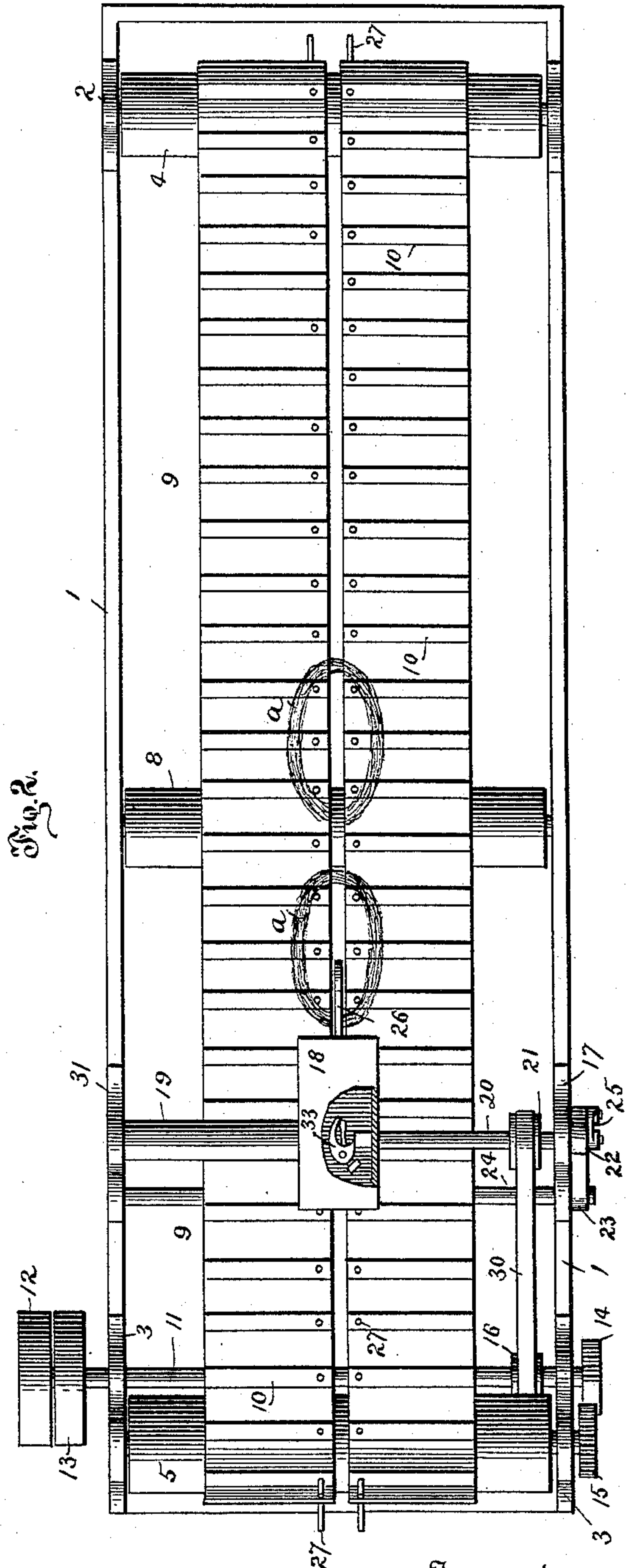
R. H. COMEY.  
MACHINE FOR TYING SKEINS OF YARN, &c.

No. 408,216.

Patented Aug. 6, 1889.



Witnesses  
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# UNITED STATES PATENT OFFICE.

ROBERT H. COMEY, OF CAMDEN, NEW JERSEY.

## MACHINE FOR TYING SKEINS OF YARN, &c.

SPECIFICATION forming part of Letters Patent No. 408,216, dated August 6, 1889.

Application filed December 31, 1888. Serial No. 295,102. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT H. COMEY, a citizen of the United States, residing at Camden, county of Camden, and State of New Jersey, have invented certain new and useful Improvements in Machines for Tying Skeins of Yarn and other Material, of which the following is a specification.

My invention consists of a machine adapted to automatically tie a skein or loop of straw, yarn, silk, or other material so that it may be dyed or otherwise manipulated without becoming entangled.

Heretofore, so far as I am aware, it has been customary to tie such skeins or loops of material by hand. But I propose to do the same by a machine, which consists of a carrier or carriers for feeding the skeins of material to a needle or reciprocating arm, which encircles the material with a cord, which is by the needle delivered to a knot-tying mechanism, where it is tied; and of driving devices for the carrier or carriers, the needle and the knotting mechanism.

In the drawings, which represent a machine adapted to carry out my invention, Figure 1 is a side view thereof, and Fig. 2 a top plan view.

Upon the frame 1 are mounted the various operative parts of the machine, it being provided at its ends with brackets or supports 2 and 3, in which are mounted the rollers 4 and 5, over which travels the endless carrier or carriers 9, which take the skeins of material to the tying mechanism.

In some suitable position, as depending from the central portion of the frame, there is arranged a tension-roller 8, mounted adjustably in the brackets 6, so that the carrier may be maintained at the proper tension.

The carrying device which I prefer to employ consists of an endless slatted belt or apron 9, in two sections arranged side by side, with sufficient space between them to permit the proper movements of the needle. The slats 10 of the carrier are provided near their adjacent ends with pins or teeth 27 or other suitable projections, around which the skeins of material are placed in the manner shown in Fig. 2, such projections serving to hold the skeins in an extended or open posi-

tion crossing the space between the two sections of the carrier. It will be observed that the carrier extends between the needle and knotter, and also past or beyond them, and serves for a support for the loop of material during the knot-tying operations. Power for driving the machine is taken from the belt 7, which is made to engage in the usual manner with either a fast or a loose pulley 12 13, mounted upon the shaft 11, which is supported in the brackets 3.

14 is a mutilated or broken gear-pinion, mounted upon the shaft 11, and arranged to mesh intermittently with a gear-wheel 15, mounted on the shaft of the roller 5, and thus impart an intermittent movement to the carrier.

The knot-tying mechanism 33 and the needle are both also driven from this shaft 11, which is provided with a pulley 16, connected by a belt 30 with a pulley 21 on the shaft 20, which actuates the knotting devices. These knotting devices are of any suitable character—such as the well-known Appleby knotter, illustrated, for instance, in Patent No. 212,420, dated February 18, 1879—and are mounted within a box or casing 18, which is shown as arranged over the carrier. The box or casing 18 is supported at the end of a sleeve 19, into which the shaft 20 extends, and is itself supported by or, preferably, formed integral with a bracket 31, secured to the frame 1.

The needle 26, which carries the tying-cord 29 and delivers it to the knotting devices so as to encircle the material forming the skein, is shown as supported upon a shaft 24, which is mounted in bearings formed in the brackets or supports 17 and 31.

22 is a crank-arm upon the shaft 20, which arm is connected by the link 25 with a crank-arm 23 upon the needle-shaft, the latter arm being the longer, so that as the shaft 20 revolves, carrying with it the crank-arm 22, the needle will be caused to vibrate, rising to carry the cord around the material of the skein and deliver it to the knotter, and retracting after the knot has been tied and the cord severed in the usual manner. The movements of the parts are so timed that the carrier is advanced during the time the needle is retracted, so that there is no interference



on the part of the needle to the free movements of the skeins of material, which, as has been stated, lie across the space between the two sections of the carrier.

5 The operation of the machine may now be understood. The skeins are placed upon the carrier, either by hand or otherwise, and are fed thereby toward the needle and knotting devices, the binding-cord 29 extending from  
10 the knotter, where it is held, to the needle-point, across the path and in front of the skein or loop of material. When the skein *a* reaches the position indicated in Fig. 1, the carrier may stop, the needle is elevated, its  
15 point passing through the center of the skein, and carries the binding-cord around the front end thereof and to the knotter. The knotting devices then draw and tie the knot, sever the cord, and grasp the new  
20 end of the cord in the usual manner, after which the needle is retracted. While the needle is retracted the carrier is advanced one step, carrying the skein into the position shown in dotted lines, Fig. 1, where it may  
25 be again arrested in its movement, and the above-described operations of the needle and knotting mechanisms are repeated, the rear portion of the skein being, however, in this instance, encircled and bound. These oper-  
30 ations are repeated so long as the skeins may be supplied to the carrier to be bound. The skeins after being tied or bound may be removed in any desired manner, or may be permitted to drop from the carrier as it turns  
35 past the roller 5 at the end of the machine.

While I have shown but one embodiment of my invention, it will be understood that there may be many modifications thereof without departing from its essential features.  
40 Thus the position of the needle and knotting mechanism might be reversed, the former being above and the latter below the carrier, or other driving mechanism than that shown might be employed; or, the carrier might be  
45 driven continuously and the needle operated

intermittently while the carrier is in motion. All such changes will, however, suggest themselves to those skilled in the art, and are not departures from my invention.

Without limiting myself to the precise construction and arrangements of parts shown, I claim—

1. The combination, with the needle, the knotter, and their actuating devices, of a movable carrier constructed to support a series  
55 of open loops of material, and extending between the knotter and the needle and past the same, whereby it serves to support the material during the knot-tying operation, substantially as set forth. 60

2. The combination, with the needle, the knotter, and their actuating devices, of a movable carrier formed of two parts, separated for the passage of the needle and constructed  
65 to support a series of open loops of material, and extending between the needle and knotter and past the same, substantially as set forth.

3. The combination, with the needle, the knotter, and their actuating devices, of an  
70 endless carrier extending between and past the needle and the knotter, and constructed to support open loops of material, and a driver for the carrier having a step-by-step motion arranged to move the carrier in one direction, 75 substantially as set forth.

4. The combination, with the needle and the knotter, of the carrier extending between the knotter and the needle and past the same, and constructed to support a series of open  
80 loops of material, the intermittent driver for the carrier, and the continuous driver for the needle and knotter, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two sub-  
85 scribing witnesses.

ROBERT H. COMEY.

Witnesses:

F. L. FREEMAN,  
HEW B. MACLEAN.