(No Model.) 3 Sheets—Sheet 1.

R. SEHRKE.

ROVING FRAME.

No. 251,475. Patented Dec. 27, 1881.

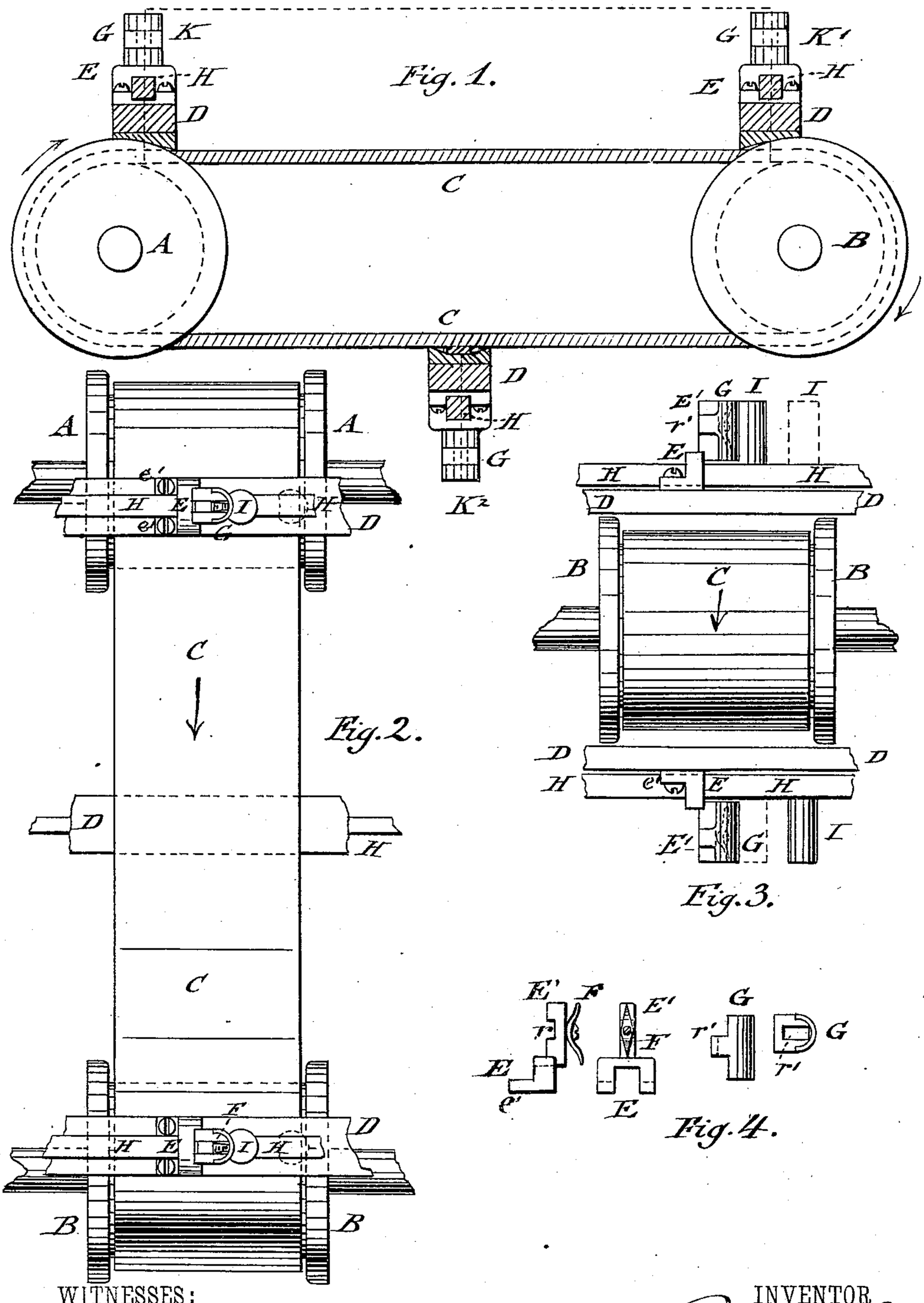

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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(No Model.) 3 Sheets—Sheet 2.

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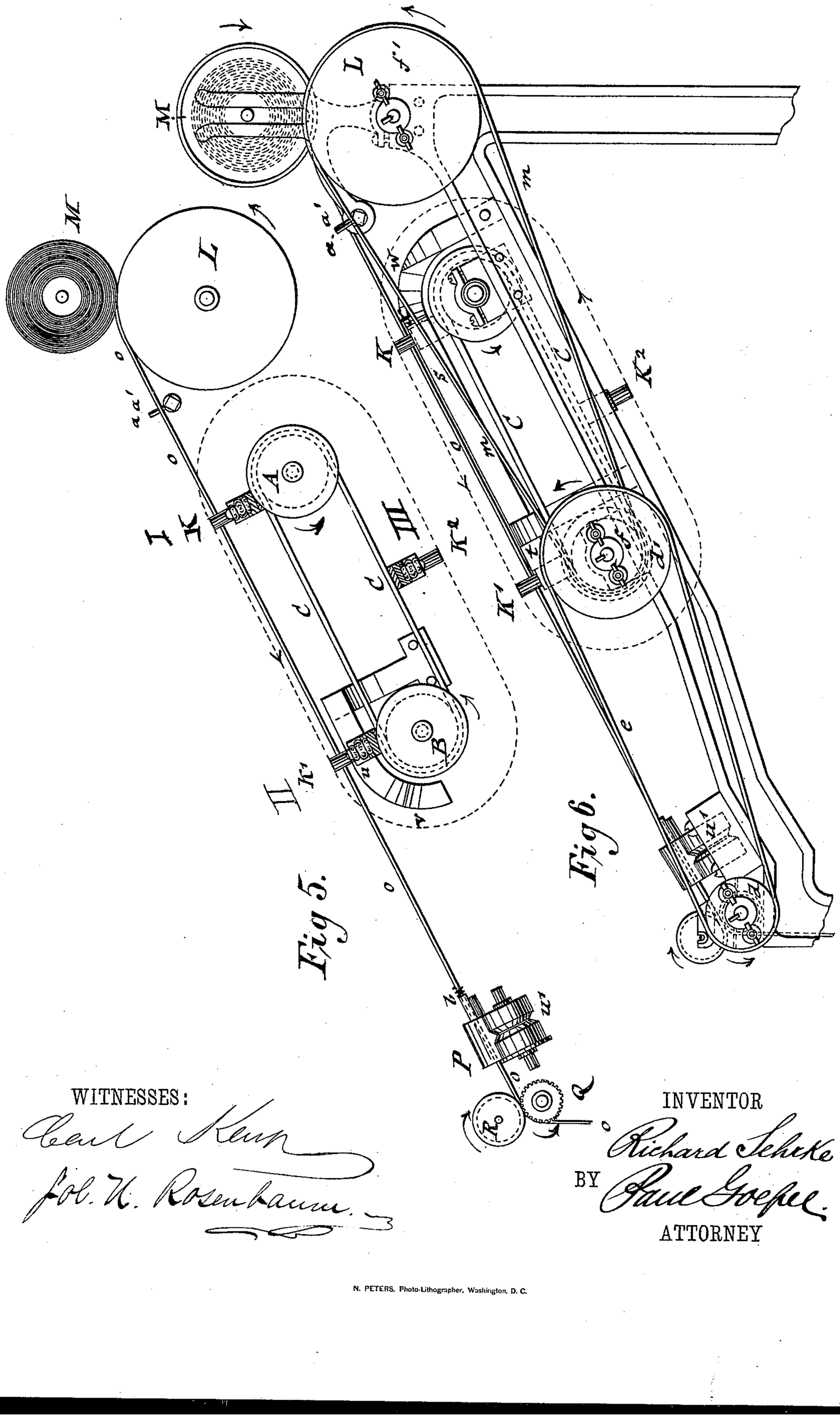

Fig 5.

Fig 6.

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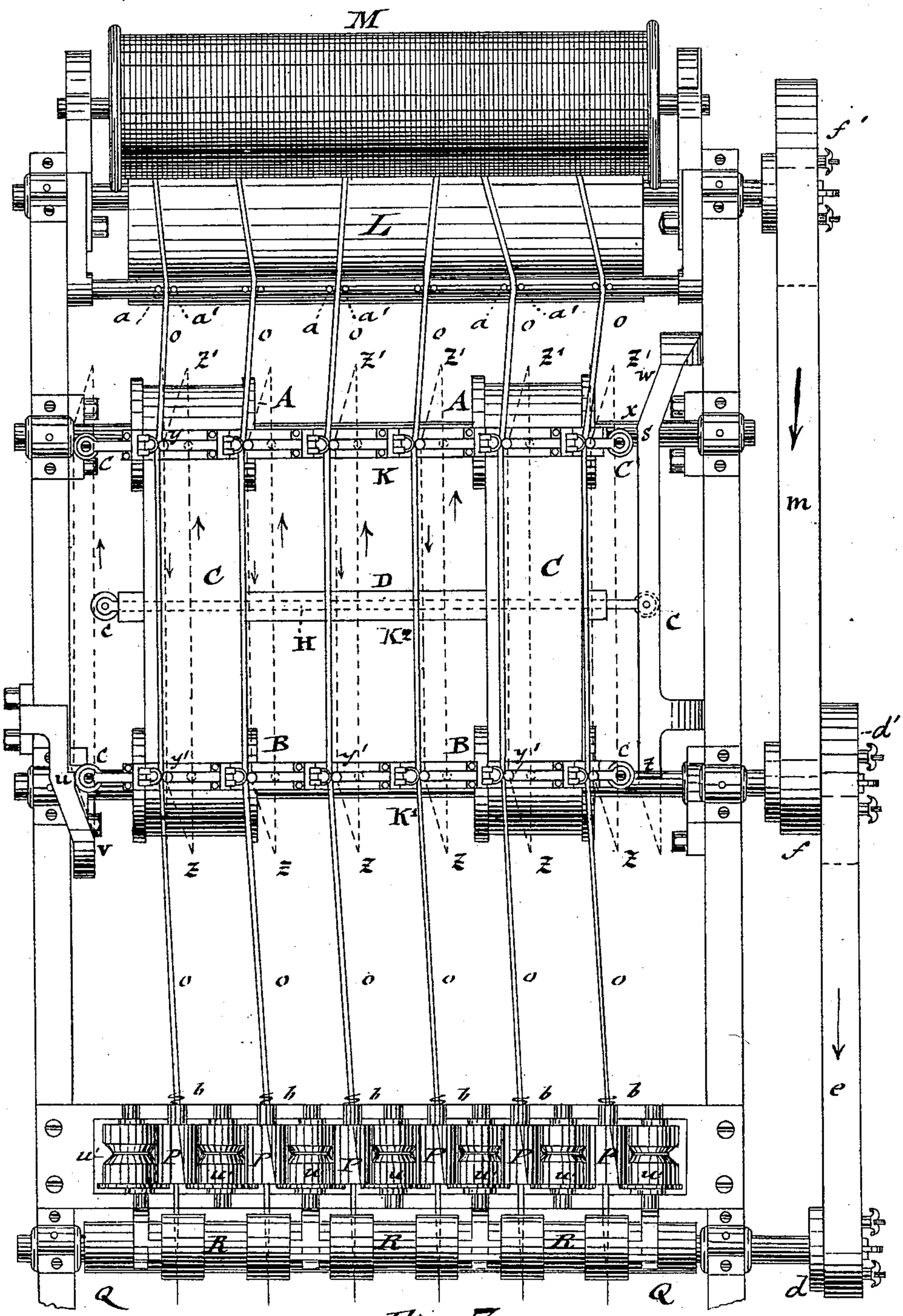

Fig. 7.

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UNITED STATES PATENT OFFICE.

RICHARD SEHRKE, OF BERLIN, GERMANY, ASSIGNOR OF ONE-HALF TO BULDGE & HILDEBRANDT, OF SAME PLACE.

ROVING-FRAME.

SPECIFICATION forming part of Letters Patent No. 251,475, dated December 27, 1881.

Application filed May 21, 1881. (No model.)

To all whom it may concern:

Be it known that I, RICHARD SEHRKE, residing at the city of Berlin, in the Kingdom of Prussia, German Empire, have invented Improvements in Roving-Frames, of which the following is a specification.

In the process of spinning—to wit, the drawing out and twisting of parallel fibers into a yarn—the operation of imparting but a slight degree of twist to the yarn, which may even afterward be undone, is called the "roving."

In the well-known roving and spinning frames heretofore used the twisting of the fiber into a cord has to be necessarily followed by a winding up of the same. This winding up of the cord is intended to be dispensed with by the roving-frame which forms the subject of this application, so that the yarn formed thereby is simply conducted away. My improved roving-frame is consequently specially adapted to be connected immediately and directly to a spinning-frame. Furthermore, in all roving and spinning frames heretofore in use the bundle of parallel fibers which constitute the band or roving is first stretched and then conducted continuously or intermittently to the twisting mechanism, so as to receive the required twist and be then wound up.

This invention is designed to conduct the roving in a uniform manner from a paying-out drum to a point which is near the twisting devices, and after twisting it by these devices to carry it away quicker by the drawing pressure-rolls than the roving or only partly-twisted part is allowed to follow. I thus obtain a drawing action on the partially-twisted roving which is between the twisters and roving-carriers.

For the purpose of confining the drawing of the roving to a certain determinate length it is necessary to retain the same by means of clamping mechanisms which successively take hold of the same. These are arranged on an endless belt or apron, and serve to convey the roving to a twisting mechanism, which is denominated the "tube." The roving is retained long enough by one set of clamps or tongs until the next set takes hold of the same, so that always a certain determined length of roving is exposed to the twisting and drawing action. The mechanism by which this operation is accomplished will be hereinafter fully described, and finally be pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional view of three tongs and their endless belt or apron applied on flanged rollers, which are represented by end views detached from the roving-frame. Fig. 2 is a top view of the endless belt, its flanged rollers, and two of the tongs. Fig. 3 is a view of one end of Fig. 2. Fig. 4 represents details of the tongs or clamping mechanism. Fig. 5 is a side view of the conducting mechanism, shown as connected with the twisting device; and Figs. 6 and 7 are respectively a side elevation and a plan view of a roving-frame, showing a number of conducting, drawing, and twisting devices.

Similar letters of reference indicate corresponding parts.

In describing my invention it is preferable to begin with the working of the conducting mechanism, as shown in Fig. 5, which represents the roving-frame in a diagrammatic manner.

On a roll, L, which turns in the direction of the arrow, is arranged the drum M, upon which the roving *o* is wound. The roving rests upon the roll L, and is carried off by the friction therewith, so that the velocity by which the roving is unwound from the drum is equal to the circumferential velocity of the roll L, consequently of a constant nature. The roving *o* passes through guides *a a'*, and then to an endless belt or apron, C, which is stretched over two flanged rollers, A and B, and provided with the clamps K K' K^2, which are arranged equidistant from each other upon the endless belt. The belt C moves with the same speed and in the same direction as the roving *o*, so that the latter, when clamped by the first set of tongs K, is not stretched, but simply retained and supported in line with the guides *a*. As soon as the tongs K arrive at their second position, I, as indicated on Fig. 5, at the point where K' is shown in Fig. 5, it releases the roving before the belt turns to pass around the roller B, while simultaneously therewith the tongs K^2 have moved up into the position formerly held

by K and have clamped the roving. The roving which is thus carried forward by the traversing tongs passes through a thread-guide, *b*, and tube P to and between the rolls Q and R, which are arranged immediately front of the tube P, to be conducted away from them for being directly or indirectly wound up, or to be delivered directly and immediately to a spinning-frame for final twisting.

The tube P is rotated by a contact-roll, *w'*, which is arranged below the same with its axis parallel to the axis of the tube. The thread-guide *b* is arranged eccentrically to the axis of the tube. The thread is twisted in the usual manner. The increased twist imparted to the yarn to each unit of space between the tubes and rolls over the twist imparted to the yarn between the tubes and conducting-tongs is the result of the close proximity of the said tubes and rolls, and the slighter twist imparted to the yarn before it reaches the tube is taken therefrom after the same has passed the tube. As consequently that portion of the thread back of the tube is only slightly twisted, it is preferable to impart a simultaneous drawing to the same. This drawing is obtained by imparting to the pressure-rolls Q and R such a velocity that they conduct the twisted yarn off at a considerably greater speed than the untwisted yarn can be conducted by the tongs to the rolls. In this manner the pressure-rolls have the additional function of drawing-rolls. The drawing out itself can only take place at that portion of the yarn which is only partly twisted—that is to say, between the tube P and the last set of tongs.

For the purpose of allowing the roving to be easily taken hold of by the tongs and guides, they are open at the upper part, the tube being also slit in the usual manner, as in other roving-frames.

Having thus described the general working of my improvement in connection with Fig. 5, I now proceed to explain the construction of the clamping mechanism shown in Figs. 1 to 4.

Each set of tongs consists of a transverse rail, D, which is secured firmly to the endless belt C. Upon the rail D are fastened one or more guides, E, by means of sidewise-extending heels *e'*, between which a rectangular recess is formed in the guide E for the movable rail H, as shown in Figs. 1 to 4. The rail H carries one or more round studs or pins, I, which form the movable jaws of the tongs. A central lug, E', of the guide E is provided with a centrally-riveted spring, F, at one side, and opposite thereto with a recess, *r*.

Upon the lug E' of the guide E is placed a semi-cylindrical sleeve, G, having an eye, *r'*, which receives the lug E and its spring F, and which forms, with the cylindrical pin I, the tongs for taking hold of the roving. When the sleeve G is in place on its lug E the bail portion of this sleeve plays loosely in the recess in said lug and is prevented from vertical displacement. If the movable rail H is therefore carried in one direction or the other, the tongs are either opened or closed. Upon each rail D are arranged sidewise of each other a number of tongs, while also several endless belts can be arranged sidewise of each other. For this purpose the spring F is used, by which the required degree of yielding is obtained, without which, even by a very accurate adjustment, no uniformly-closing contact of the tongs could be produced. The movable rail H, by the transverse motion of which the tongs are either closed or opened, carries at each end an anti-friction roller, *c*. When the first roller *c*, on the right-hand side, (see Fig. 7,) is conducted along the helical portion *w x* of a guide-rail, *s t*, at one side of the frame, the movable rail H is carried toward the left, and the tongs are closed thereby.

The tongs are kept closed by the motion of the roller *c* along the straight rail-section *s t*, which is parallel to the direction of motion, until the roller *c* at the opposite side of the movable rails H is acted upon by the inclined and curved portion *u v* of a corresponding rail at the opposite side of the frame. The movable rail H is carried back toward the right, and all the tongs are opened thereby and held in this position while returning, with the belt C at the lower side of the same. The shape and length of the two curved and inclined guide-rails are such that the tongs are closed only when they are carried up entirely by the endless belt C, while they begin to open before they move downward with the belt, special care having to be exercised that the downwardly-moving tongs do not open until the upwardly-moving tongs at the other end have fully clamped the roving.

The track which the pins I of the tongs describe is indicated by the dotted lines *y y' z z'* in Fig. 7.

The endless belt and clamping-tongs are set in motion by a belt, *e*, and pulleys *d d'*, while the belt *m* and the pulleys *f f'* transmit the motion to the roll L.

Fig. 6 shows a side view of the entire roving-frame, and Fig. 7 shows a top view of the same as arranged for six yarns.

It is obvious that the machine may be arranged for any number of yarns, which are first taken up by the clamping-tongs, twisted slightly at that part between the conducting-tongs K K' K² and the pressure-rolls R Q, and at the same time drawn out, which is assisted by the slight twisting imparted by the tubes P. The final twist is given between the tubes P and the rolls R Q. As continually new sections of the yarn are added to the parts already twisted, it is possible to deliver to the spinning-frame uniformly drawn out and twisted yarns.

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

1. The combination of mechanism for delivering the roving, an endless belt or carrier and its carrying-rolls, clamping-tongs equidistantly arranged on the carrier, endwise-movable rods

for actuating the tongs, cam-rails for actuating the rod, and means for operating the belt, substantially as described.

2. The combination of mechanism for delivering the roving, an endless belt or carrier and its carrying-rolls, a jaw fastened to the carrier, an endwise-movable rod provided with a jaw which operates in conjunction with the jaw attached to the carrier, cam-rails for actuating the rod, and means for actuating the carrier, substantially as described.

3. The combination of mechanism for delivering the roving, an endless belt or carrier and its carrying-rolls, a jaw fastened to the carrier, provided with a yielding spring-acted griping-surface, an endwise-movable rod provided with a jaw which operates in conjunction with the jaw attached to the carrier, cam-rails for actuating the rod, and means for actuating the carrier, substantially as described.

4. The jaws of the tongs, consisting of a recessed guide, E, having a vertical central lug, E′, provided with a recess, *r*, with front spring, F, and a sleeve, G, having an eye, *r*′, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD SEHRKE.

Witnesses:
CARL FEHLERT,
BERTHOLD ROI.