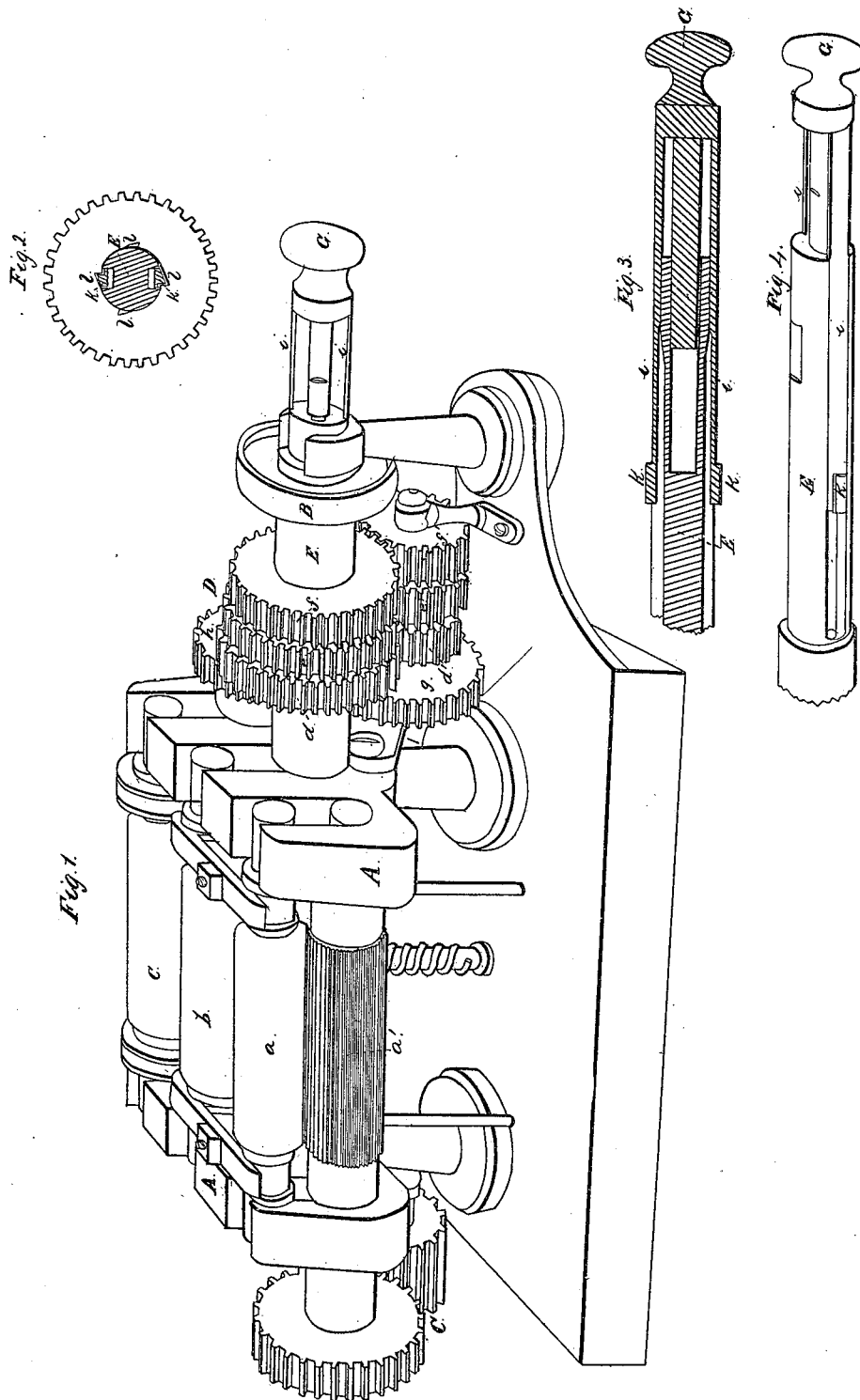


A. Jenks.

Drawing Head for Spinning.

N^o 6,938.

Patented Dec. 11, 1849.



UNITED STATES PATENT OFFICE.

ALFRED JENKS, OF BRIDESBURGH, PENNSYLVANIA.

MODE OF CHANGING THE GEARING OF DRAWING-HEADS WHILE IN MOTION.

Specification of Letters Patent No. 6,938, dated December 11, 1849.

To all whom it may concern:

Be it known that I, ALFRED JENKS, of Bridesburgh, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement for Changing the Velocities of Drawing-Head Rollers while in Motion and for other Purposes; and I do hereby declare that the following is a full, clear, and exact description of the characteristics which distinguish my invention from all others heretofore known, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a perspective view of the drawing head, Fig. 2 is a side view of one of the cog wheels, Fig. 3 is a longitudinal section through a portion of the spindle detached from the machine, and Fig. 4 is a perspective view of the same.

In drawing heads it is essential that the speed of the drawing rolls should vary with the quantity of cotton fed to them, in order that the sliver produced may be always of uniform size; and my invention consists in giving a triangular cross section to the key-seats of a cone of differential cog wheels, through which the constant speed of the prime mover is transmitted to the rolls; and in attaching a sliding key of a corresponding cross section to a spring bar which is received in a groove extending lengthwise in the surface of the spindle on which the cog wheels are mounted, the spring bar extends beyond the end of the spindle and is moved by hand from the key seat of one wheel to that of another when it is necessary to change the speed of the drawing rolls.

In the drawing A, is the frame of the drawing head on which are mounted three pairs of drawing rolls (*a a' b b', c, c'*, the lower rolls *b'* and *c'* being hidden by the front rolls) the lower ones of each pair are driven while the upper ones are put in motion by friction against the lower ones. The central lower roll is put directly in motion by a belt pulley B mounted upon its spindle E which extends some distance beyond the roll journals and has a cone of differential wheels *d, e, f*, mounted upon it. The outer lower rolls *a', c'*, are driven from the central one, that (*a'*) nearer the front of the figure by a train of wheels C at the left end of the rolls, and that at the back of the figure by the train of wheels D, at the right end of the rolls. The latter train is composed of two

distinct sets of wheels, the first set comprising the differential wheels *d, e, f*, on the spindle of the central roll and corresponding wheels *d', e', f'*, on a short counter shaft; the second set comprising the wheels *g, h*, the former secured to the counter shaft and the latter to the spindle of the outer roll. The first set of wheels is arranged in pairs *d d', e e', f f'*, the largest one of the shaft gearing with the smallest on the spindle. The wheels on the counter shaft are rigidly attached to it, those on the spindle are loose and may revolve with it or slide round upon it.

The speed of the spindle E is constant, and as the wheels *d, e, f*, all differ in size, it is evident that whichever one is attached to the spindle will communicate a number of revolutions to the counter shaft differing from that transmitted to it by either of the others; and that if one is fixed to the spindle, the others being driven by their mates on the counter shaft, will slide round upon it. When the speed of the counter shaft is to be changed the wheel, at the time keyed to the spindle, must be detached from it, and one of the others connected therewith. This is accomplished by the following arrangement; the opposite sides of the spindle are deeply grooved in the direction of its length, these grooves each receive a spring bar *z, z'*, which extend beyond the end of the spindle and are connected with each other by a knob G. The keys *k, k'*, are attached to the outer sides of the inner extremities of these spring bars. The combined thickness of a key and spring bar not exceeding the depth of the groove. The driving edge of the key is radial; its upper side sloping backward from the driving edge until its back edge is brought within the groove in the spindle and vanishes into the spring bar. Each cog wheel is furnished with at least two key seats *l, l'*, corresponding in section with the keys, which latter are equal in length to the thickness of the wheel hubs; if now the knob be placed in such position that the keys exactly correspond with one of the wheels, that one will be engaged with and driven by the spindle, while the others being driven by their mates on the counter shaft will slide round on the spindle; if now that wheel is to be detached and the one nearer the outer end of the spindle connected, the hand of the operator is applied to pull the knob outward and as soon as the wheels in their revolution arrive

in such a position that their respective key seats are in the same straight line, the key will be drawn out of the inner into the outer wheel. If the key were like ordinary keys, 5 with parallel edges, it would either be broken by the differing motions of the two wheels, or the teeth of one wheel would be stripped off; but by forming the keys and their seats with an inclined side, and attaching them to 10 spring bars, the latter are depressed into the grooves of the spindle by the corresponding inclined faces of the key seat of the faster moving wheel which is then passing over them, and all difficulty is avoided.

15 In the usual construction of drawing heads where the velocity is varied without stoppage, the speed is changed in one of two ways, both of which occupy more room, are more complex, and more costly than the one 20 just described. In one of these arrangements each of the differential wheels is mounted upon one extremity of a sleeve, whose opposite end is furnished with a pulley, and the change in the speed is effected by shifting 25 the belt from one pulley to the other; it will be perceived that in this arrangement a separate pulley is required for each wheel, while in mine but one is necessary; in addition to this, there would be the cost of the 30 several sleeves required to connect the wheels with their respective pulleys. In another arrangement in use, the wheels are separated

from each other by a space greater than the length of the key, so that the latter cannot engage with two wheels at the same time; 35 this arrangement occupies a much greater space than mine, in which the wheel hubs touch each other, it is also not as convenient, as the key has to be moved a much greater distance; and the cost is greater, as the 40 wheels have to be so connected with their spindle that they cannot move out of their proper position with respect to their mates on the counter-shaft.

It is obvious that the forms and arrange- 45 ments of the various members of my device for disconnecting and connecting the several differential wheels with their spindle can be modified to a very great extent without the least departure from the characteristics of 50 my invention, and I contemplate modifying the same as may be required to adapt it to different purposes.

What I claim as my invention and desire 55 to secure by Letters Patent is—

A sliding spring key arranged and operated substantially as herein set forth for connecting any one of a series of wheels with a common spindle and for disconnecting it therefrom at will.

ALFRED JENKS. [L. s.]

Witnesses:

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EDWARD ONYX.