(No Model.) 2 Sheets—Sheet 1.

O. E. DROWN.

TENTERING MACHINE.

No. 295,155. Patented Mar. 18, 1884.

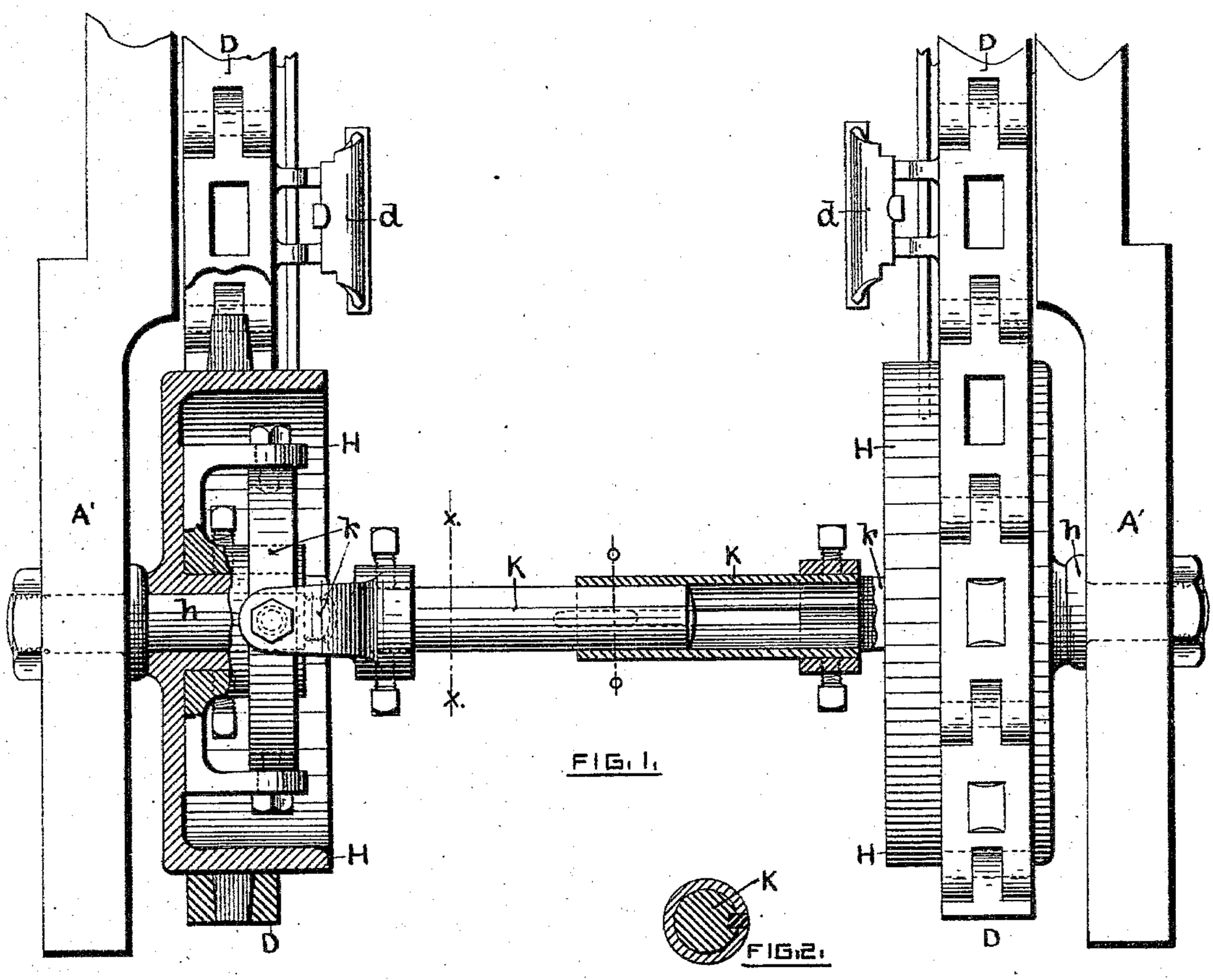

FIG. 1.

FIG. 2.

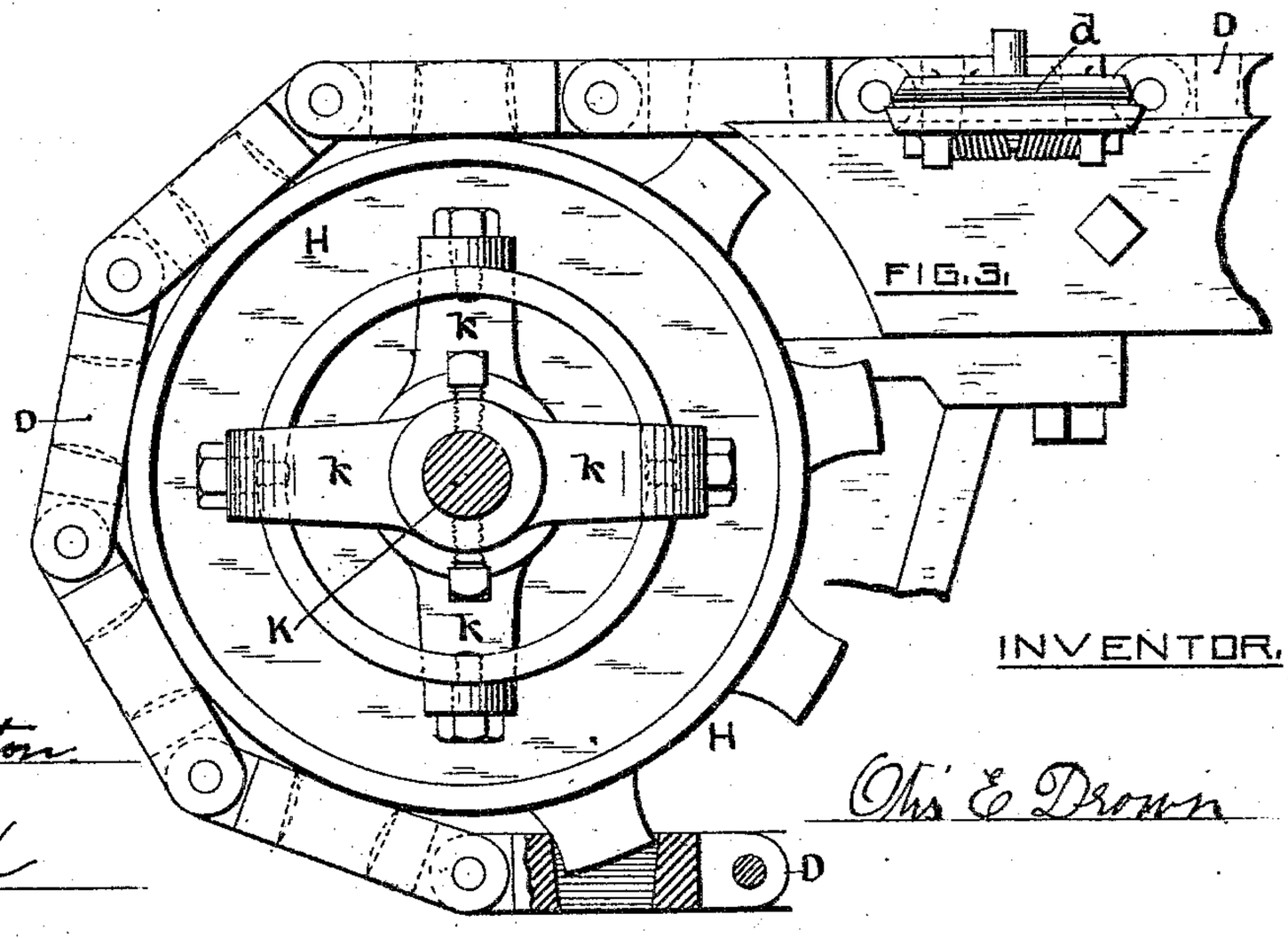

FIG. 3.

WITNESSES.

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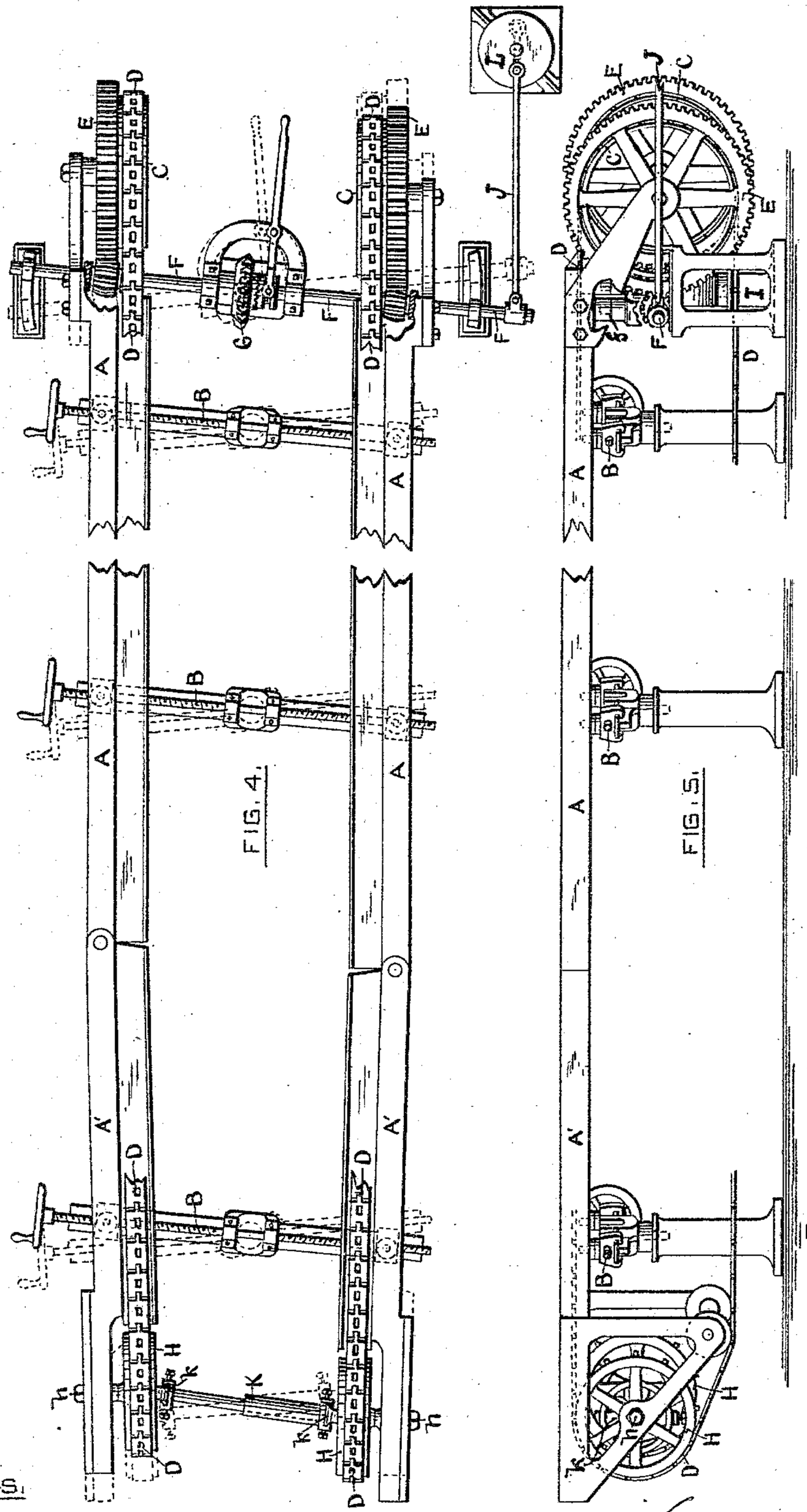

FIG. 4.

FIG. 5.

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UNITED STATES PATENT OFFICE.

OTIS E. DROWN, OF LINCOLN, RHODE ISLAND, ASSIGNOR TO ANN MARIA DROWN, OF SAME PLACE, AND WILLIAM F. SAYLES AND FREDERIC C. SAYLES, BOTH OF PAWTUCKET, RHODE ISLAND.

TENTERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 295,155, dated March 18, 1884.

Application filed April 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, OTIS E. DROWN, of Lincoln, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Tentering-Machines; and I do hereby declare that the following specification, taken in connection with the accompanying drawings, forming a part of the same, is a full, clear, and exact description thereof.

Tentering-machines as heretofore constructed have been of two classes. In one class the side rails of the machine which support the conveyer-chains are incapable of movement in the direction of the length of the machine, but are made adjustable toward and from each other, to adapt the machine to operate upon fabrics of different widths. In machines of the other class the side rails, in addition to being adjustable toward and from each other, are also arranged to be alternately longitudinally reciprocated, for the purpose of giving to the fabric operated upon a certain peculiar finish especially desirable in some classes of goods. As usually constructed, machines of both classes have been provided at the receiving end of the machine with pulleys disconnected from each other, and therefore revolving independently, over which the chains for conveying the fabric pass loosely. In such machines the two chains wear unevenly, soon becoming of unequal lengths, and although the fabric may be introduced into the machine with the weft at right angles to the warp, it will be delivered with such angle changed, thereby giving to the fabric an undesirable appearance, which affects its sale. It has been found, however, in the case of machines of the first class referred to, in which the side rails have no lengthwise movement, but always occupy the same relative position to each other, that the disadvantages incident to the liability of the chains to wear unevenly can be avoided by mounting the pulleys at the end of the machine at which the fabric is received upon one and the same shaft, so that the two pulleys must at all times revolve together and at the same speed, and by making such connection between the chains and the surfaces of the pulleys over which they run that the chains cannot slip or slide upon the pulleys, thus causing the two chains to travel together always at the same speed, and corresponding links to remain opposite to each other irrespective of whether the strain upon the two chains be equal or not. So far as known to me, these desirable results have not, prior to my invention, been secured in the second class of machines which I have named, and in which the side rails are, when the machine is in operation, reciprocated alternately in the direction of their length, as well as adjustable toward and from each other; and my improvement consists in a combination of devices, as hereinafter described, whereby, notwithstanding the fact that the relative positions of the side rails are constantly changing by reason of their longitudinal movement, the two conveyer-chains are compelled to travel at the same speed, thus equalizing the wear upon the two chains and preventing their lengths from varying relatively.

Referring to the drawings, Figure 1 represents a top view of the receiving end of the machine provided with my improved mechanism, which is shown partially in section. Fig. 2 represents a transverse section of the connecting-shaft on line *o o* of Fig. 1. Fig. 3 shows an elevation of one of the sprocket-wheels, the connecting-shaft being in section on line *x x* of Fig. 1. Fig. 4 represents a top view of a tentering-machine embodying the invention. Fig. 5 represents a side elevation of the same.

As shown in Fig. 4, the tentering-machine to which my invention is applicable is provided with the usual side rails, A, which support the conveyer-chains, and these side rails are arranged so that they may be adjusted toward and from each other by means of screws B, to enable the machine to tenter fabrics of different widths, and the rails A′ at the receiving end of the machine are pivoted so that they may be made to diverge, and thereby stretch the fabric for a fixed distance as it enters. The delivery end of the machine is of the usual construction, being provided with sprocket-wheels C C, which drive the endless chains D D. The chains shown in the drawings are of that variety in which each link is provided with a clamp, *d*, Figs. 1 and 3, of well-known construction, although chains the links of which

are provided with pins or hooks may equally well be employed. The wheels C C are secured to gears E E, which are mounted on brackets attached to the rails A A, and are driven by pinions on the shaft F, the said shaft being driven through the gear G from any convenient source of power. Means are provided for giving to the side rails the longitudinal reciprocating movement required in this class of machines. The shaft F is arranged to swing upon a pivot mounted in a standard, I, located beneath the center of the shaft. To one end of this shaft F is attached a link-rod, J, connected at its opposite end with a crank-wheel, L, which is continuously driven by suitable power. The bearings for the shaft F are pivotally connected to the side rails, A, as shown at *f*, Fig. 5. As the crank-wheel L revolves, the shaft F is, by means of the rod J, oscillated upon its pivot, and in turn gives to the side rails an alternate longitudinal motion. To insure a connection at all times between the pinions *p p* upon the shaft and the gears into which they mesh, the faces of the pinion-teeth are rounded, as shown at Fig. 4. In the drawings, the crank-rod J is shown at the extreme end of its throw, and one of the side rails at the limit of its motion in one direction, and the other rail at its limit in the opposite direction. The reverse position of the parts is indicated in dotted lines. The adjusting-screws B are also pivotally mounted at their centers, as clearly shown in the drawings, to allow this longitudinal movement of the side rails, with which they are connected.

At the receiving end of the machine I employ sprocket-wheels H H in place of the smooth-faced pulleys heretofore used, the teeth of which sprocket-wheels engage the links of the conveyer-chains D D, and prevent the chains from slipping. These sprocket-wheels are loosely mounted on studs *h h*, secured to the rails A'. To connect these two sprocket-wheels so that they shall revolve together and at the same speed without interfering with the longitudinal reciprocating motion of the side rails to which they are secured, I make use of the following devices: To the hubs of the wheels I attach gimbals or universal joints *k k*, and then connect these joints together by a shaft. In a machine in which it is not desired to adjust the side rails toward and from each other, an ordinary solid shaft may be employed. In machines like the one shown in the drawings, in which the side rails are to be so adjusted, I employ a telescopic shaft, K. When a telescopic shaft is used, the two parts of such shaft are splined to each other, as shown at Figs. 1 and 2, so that the two wheels with which the two parts of the shaft are respectively connected shall revolve together at the same speed.

From the foregoing it will be understood that by employing sprocket-wheels at the receiving end of the machine, and by connecting them together by suitable free-jointed connections, the working-lengths of the conveying-chains D D will, in the operation of tentering cloth, remain always the same, while, by means of the jointed connections *k k*, the side rails may be longitudinally reciprocated, notwithstanding that the sprocket-wheels mounted thereon are connected and made to revolve together.

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

1. The combination, substantially as set forth, of traveling chains carrying tenter-hooks or equivalent devices, side rails for supporting the chains, mechanism for alternately longitudinally reciprocating said side rails, sprocket-wheels for each chain at each end of the machine and engaging with said chains, and a shaft uniting the sprocket-wheels at the receiving end of the machine, and devices for joint-connecting said shafts to said wheels.

2. The combination, substantially as before set forth, of traveling chains carrying tenter-hooks or equivalent devices, side rails for supporting said chains, and devices for adjusting them relatively to each other, and mechanism for alternately longitudinally reciprocating the same, sprocket-wheels for each chain at each end of the machine, engaging with said chains, a telescopic shaft uniting the sprocket-wheels at the receiving end of the machine, and devices for joint-connecting said shafts to said wheels.

OTIS E. DROWN.

Witnesses:
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I. KNIGHT.