

(No Model.)

R. EMERSON.
KNITTING MACHINE.

No. 485,738.

Patented Nov. 8, 1892.

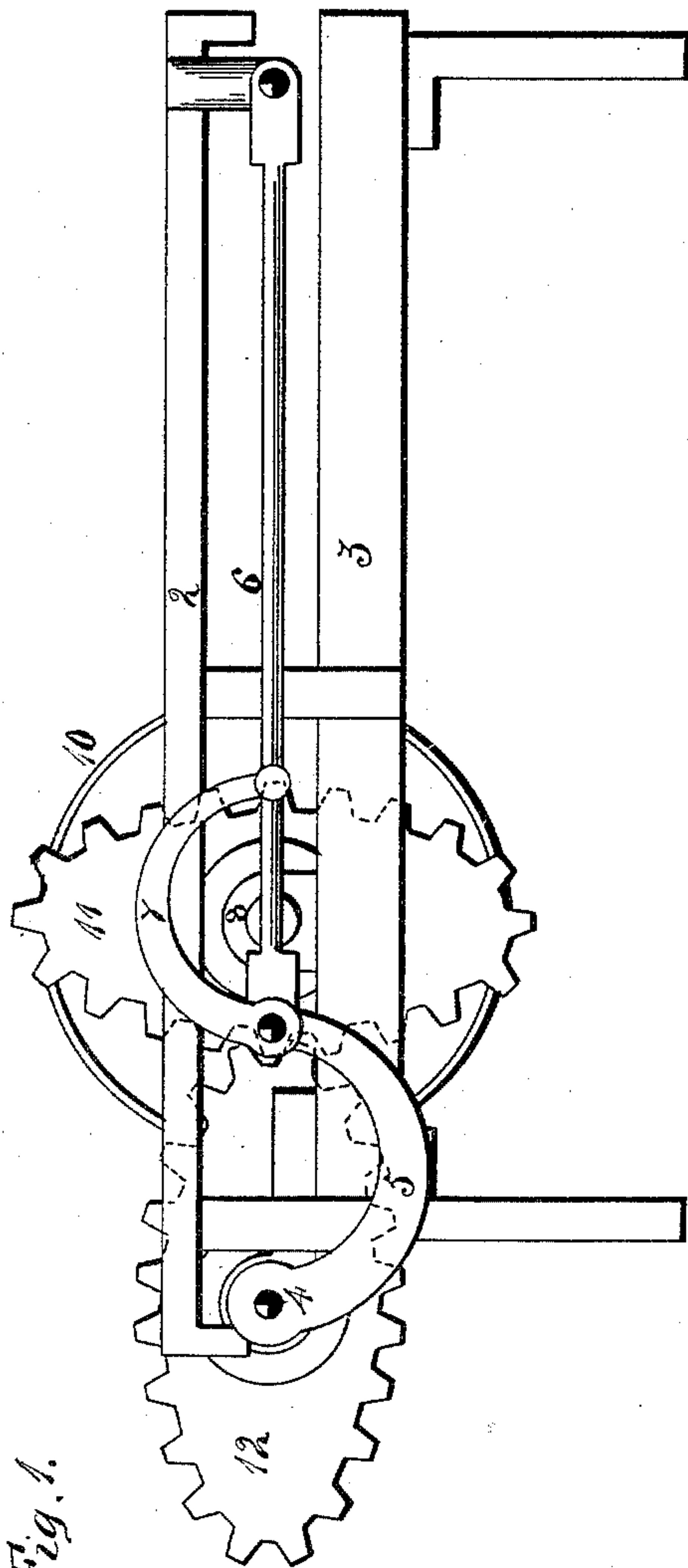
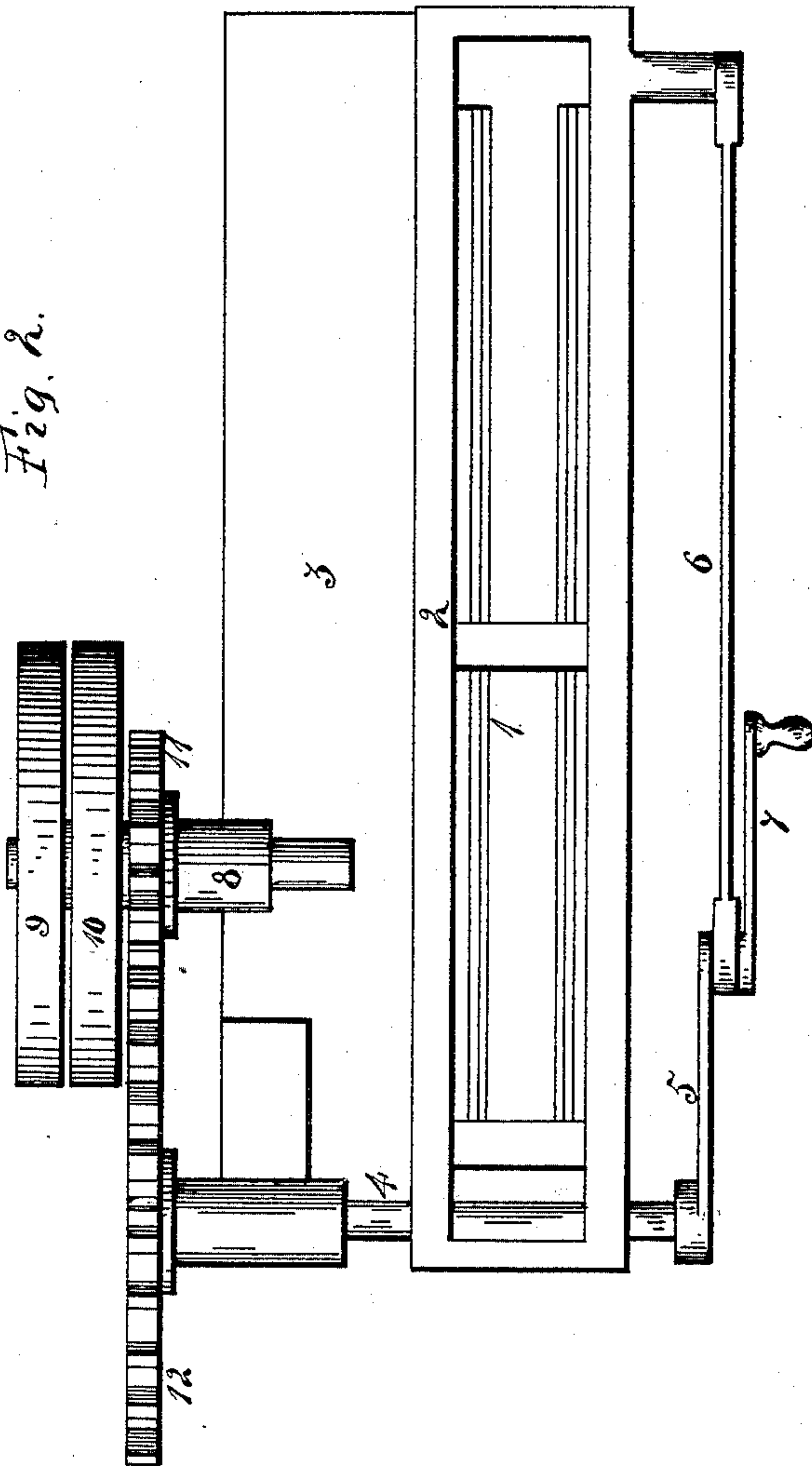


Fig. 1.

Fig. 2.



Witnesses:

E. Behel.

L. L. Miller.

Inventor:
Ralph Emerson
By A. O. Behel
Atty.

UNITED STATES PATENT OFFICE.

RALPH EMERSON, OF ROCKFORD, ILLINOIS.

KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 485,738, dated November 8, 1892.

Application filed September 1, 1891. Serial No. 404,477. (No model.)

To all whom it may concern:

Be it known that I, RALPH EMERSON, a citizen of the United States, residing at Rockford, county of Winnebago, and State of Illinois, have invented certain new and useful Improvements in Knitting-Machines, of which the following is a specification.

This invention relates to a class of knitting-machines known as the "straight machines," in which two rows of needles are located in a needle-bed, and upon which needle-cams operate to raise and lower them in the process of knitting by a reciprocating movement imparted thereto by the driving mechanism of the machine. In knitting-machines of this class it has heretofore been impossible to knit faster than a certain speed, owing to the fact that the cam-slide must come to a standstill at the end of each reciprocation, and should the speed be increased the machine would soon destroy itself.

The object of this invention is to impart an increased speed to the cam-slide during that portion of its movement in which the cam is traversing the extent of the needle-bed, gradually reducing its speed after the cam leaves the needles, reverses its movement, and again engages the needles on its return movement, and by thus operating the cam-slide I am able to produce more knit fabric without in any manner racking or driving the machine beyond its endurance.

In the accompanying drawings, Figure 1 is a side elevation of a knitting-machine, illustrating mechanism for accomplishing my object. Fig. 2 is a plan view of the machine shown at Fig. 1.

The knitting-machine illustrated in the drawings shows the application of my improvement thereto for accomplishing the above-stated objects; and it consists of a needle-bed 1 and cam-slide 2, supported to reciprocate in the lengthwise direction of the bed for the purpose of raising and lowering the knitting-needles during the process of knitting. This bed is supported upon a frame 3. A shaft 4, supported upon the frame, has a crank 5 located on one end, and a link 6 connects it with the cam-slide, and a winch 7 has a connection with the crank and link, so

that movement can be imparted to the cam-slide by the operator. A bracket 8 is secured to the frame of the machine and supports two pulleys 9 and 10, the former being a loose or idle pulley. Upon the bracket is located an elliptical gear-wheel 11, which has a fixed connection with relation to the pulley 10, so that any movement imparted to the pulley will be imparted to the elliptical gear-wheel. An elliptical gear-wheel 12 is secured to the shaft 4. These elliptical gear-wheels have a connection with each other by their teeth meshing, as in ordinary gear-wheels. When the cam-slide is in its position shown in the drawings, it is at the end of its reciprocation in one direction, and the teeth of the elliptical gear 11 are in mesh with the teeth of the elliptical gear 12 at the greatest diameter of the latter, as shown in the drawings. If the belt be slipped from the loose pulley onto the tight pulley, a rotary movement will be imparted to the elliptical gear-wheel 11, and through its connection with the gear-wheel 12, the crank 5, and link 6, a reciprocating movement will be imparted to the cam-slide; but this reciprocating movement of the cam-slide will not be uniform, for as the elliptical gear-wheels revolve the pitch-time at the point of mesh of their teeth is constantly changing, thereby producing an alternate quick and slow movement of the shaft 4. The slow portion of the movement is when the least diameter of elliptical gear-wheel 11 and the greatest diameter of elliptical gear-wheel 12 are in mesh, and this occurs when the cam-slide is at one end of its reciprocating movement, and as their diameters change the speed of the cam-slide is increased until the greatest speed is reached at the point when the teeth of the greatest diameter of wheel 11 and the least diameter of wheel 12 are in mesh, and the cam-slide will then be in the center of its reciprocation, and at this point the speed gradually decreases until at the end of the cam-slide's reciprocation.

Owing to the conformation of the elliptical gear-wheels a substantially-uniform speed can be maintained during the time the cam-slide is traversing the needles or that portion

when the knitting is accomplished, and the same will slow up to allow the cam-slide to change its direction of movement.

I claim as my invention—

- 5 In a knitting-machine, the combination of a needle-bed, a cam-slide, and means for imparting a slow movement to the slide when

about changing its direction of motion, and an increased movement which is approximately uniform during the knitting process. 10

RALPH EMERSON.

Witnesses:

GEO. H. STANLEY,

A. O. BEHEL.