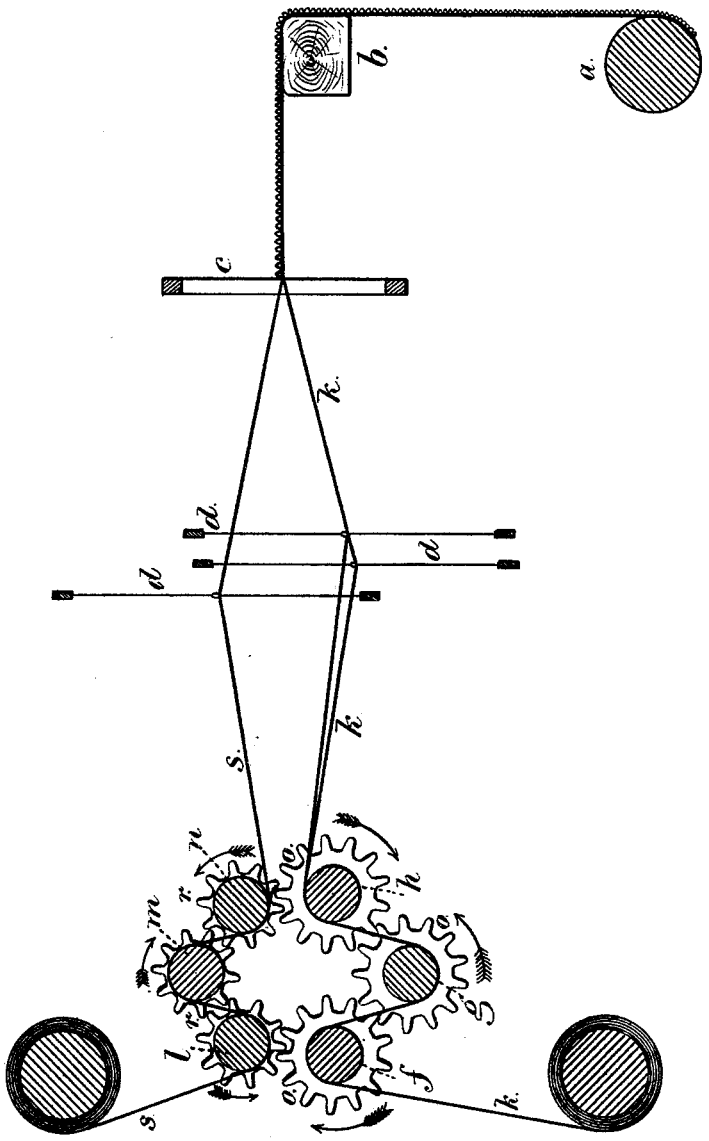
W. OOTHOUT.

WARP REGULATOR.

No 189,775. Patented April 17, 1877.




Witnesses

Chas. H. Smith

Geo. T. Pinckney

Inventor

William Oothout.

per Lemuel W. Serrell

# UNITED STATES PATENT OFFICE.

WILLIAM OOTHOUT, OF BROOKLYN, E. D., NEW YORK, ASSIGNOR TO HIMSELF AND GIBBONS L. KELTY, OF SAME PLACE.

## IMPROVEMENT IN WARP-REGULATORS.

Specification forming part of Letters Patent No. **189,775**, dated April 17, 1877; application filed February 14, 1877.

*To all whom it may concern:*

Be it known that I, WILLIAM OOTHOUT, of Brooklyn, E. D., in the county of Kings and State of New York, have invented an Improvement in Warp-Regulators for Looms, of which the following is a specification:

In looms for weaving corded fabrics, such as "terry," and piled fabrics, such as Brussels, velvets, &c., the surface-warp is drawn along more rapidly than the foundation or back warps, and in so doing there is sometimes irregularity in consequence of the varying tension or friction upon the yarn or yarn-beams; hence the corded surface is liable to slight irregularities, or a greater or less proportion of surface-warp in comparison to the foundation-warp is consumed.

The object of the present invention is to insure entire uniformity in the surface-warp relatively to the foundation or back warps; and for this purpose I make use of two sets of regulator-rollers, one for the surface-warps, and the other for the back or foundation warps, and these are geared together in such a manner that the surface speed of one set of rollers will bear the same relation to the surface speed of the other set of rollers that the surface-warps bear to the foundation or back warps, so that while the take-up operates in the usual way to draw along the fabric in the process of weaving, the warp-regulator will insure uniformity in the supply of the different kinds of warps.

In the drawing I have represented the improvement by a section transversely of the regulator-rollers.

The cloth-beam *a*, breast-beam *b*, lay *c*, heddles *d* and their operative mechanisms are to be of any desired character, and operate in any of the well-known modes of weaving, and, hence, do not require further explanation.

The rollers *f g h* form the group of rollers that regulate the back or foundation warps *k*. These are geared together, and the warps pass around the same in the manner indicated, so that they move together, and the movement of the surface of the rollers determines the speed of the warps.

I am aware that one group of rollers of this character has been employed to regulate the whole of the warps in the loom.

The rollers *l m n* form a second group of warp-regulating rollers for the surface-warps *s*. These rollers are geared together, so that they move with the warps, and at the same surface speed.

I have shown the gears *o* upon the rollers *f*, *g*, and *h* larger than the gears *r* upon the rollers *l m n*, so that the gears can all form one train, and the respective groups of rollers will move at the relative speed resulting from the difference in the size of the gears. It may sometimes be preferable to have the rollers of each group geared together, and to have changeable gears upon the projecting shafts of one roller in each group to connect the groups, so that these gears can be varied to proportion the surface speed of the respective groups of rollers according to the relative speed with which the surface and foundation warps are required for the weaving.

I claim as my invention—

In a warp-regulator, the combination of two groups of rollers, one for the surface-warps, and the other for the foundation or back warps, and differential gearing for connecting the rollers and determining the relative speeds of movement of the warps, substantially as set forth.

Signed by me this 8th day of February, A. D. 1877.

WILLIAM OOTHOUT.

Witnesses:

LOUIS S. TURNER,

GEORGE H. PHILLIPS.