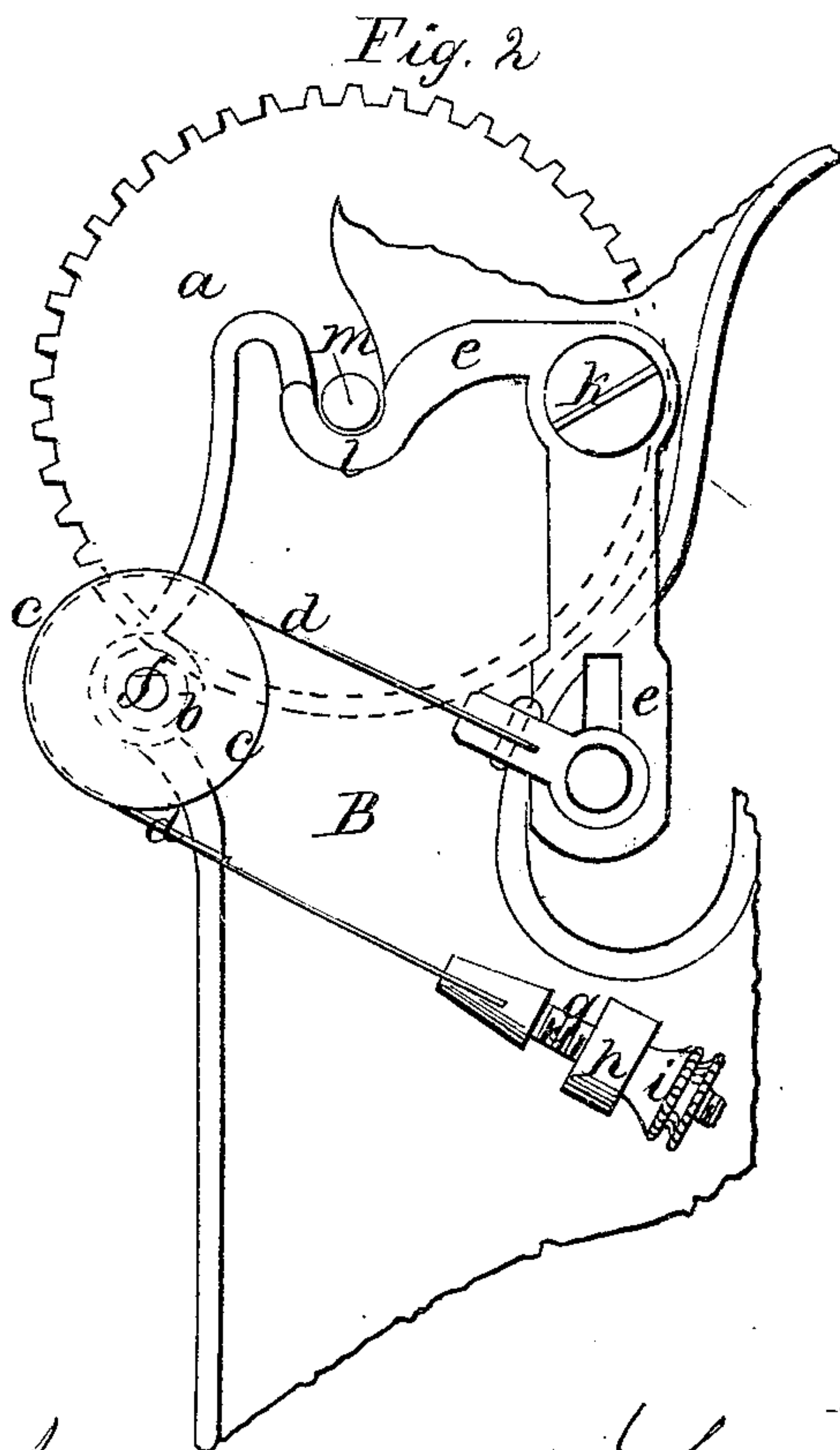
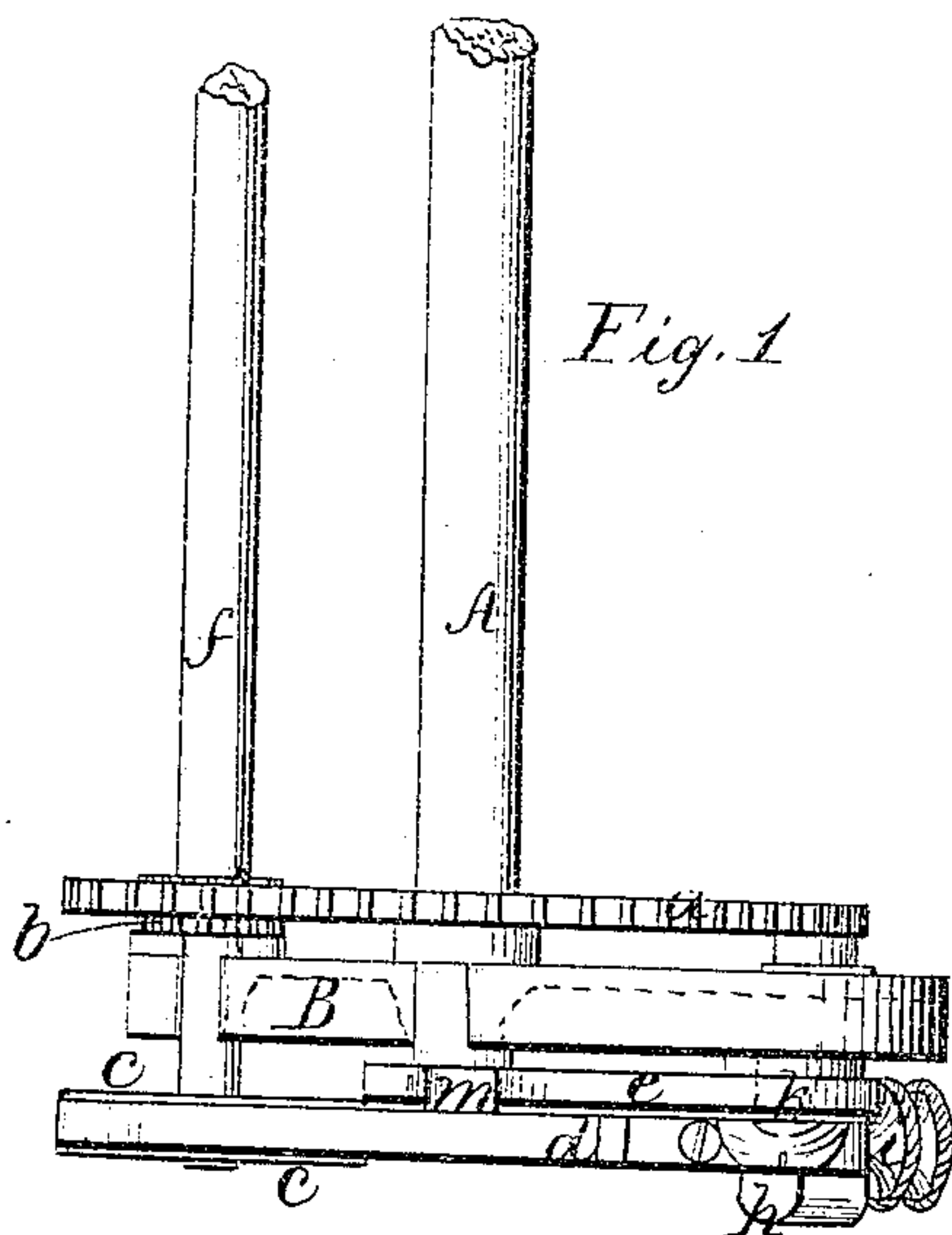


I. R. Wattles.

Take-Up and Let-Off.

N^o 29,427.

Patented Jul. 31, 1860.



Witnesses
R. H. Eady
J. R. Haley

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UNITED STATES PATENT OFFICE.

LUTHER R. WATTLES, OF NEWTON, MASSACHUSETTS.

LOOM.

Specification of Letters Patent No. 29,427, dated July 31, 1860.

To all whom it may concern:

Be it known that I, LUTHER R. WATTLES, of Newton, (Upper Falls,) in the county of Middlesex and State of Massachusetts, have
5 invented a new and useful Improvement in Looms for Weaving; and I do hereby declare the same to be fully described and represented in the following specification and the accompanying drawings, of which—
10 Figure 1, is a top view, and Fig. 2, a side elevation of my said invention in its application to or combination with the yarn beam of a loom so that as the weight of the yarn on the beam may decrease during the process of
15 unwinding it therefrom as the weaving may progress, such diminishing weight shall create a proportionate or approximately proportionate diminution of the friction applied to the beam for the purpose of main-
20 taining due tension of the warps.
It is well known that the common method of obtaining tension on the warps is by means of a weighted friction strap going around the yarn beam or a pulley applied
25 thereto, in which case, the friction is constant. This causes inequality of strain or tension on the warps, such tension being the least when the beam is full or about so and grows greater in proportion as the yarn is
30 drawn off the beam. With my invention however, I effect an equality or an approximate equality of tension or draft on the yarn during the process of unwinding it from the beam, and for this purpose I combine
35 with the yarn beam in manner as follows, mechanism which I now shall proceed to describe and which may be termed a diminutional friction apparatus.
It consists of a pulley *c*, a friction band, *d*,
40 and a bent lever, *e*, see Figs. 1, and 2, of the drawings applied to the yarn beam by two gears *a*, *b*. One of these gears, viz., *a*, is fixed to the head or to the axle of the yarn beam, A, so as to rotate simultaneously
45 therewith. The other (*b*,) runs on a separate stud or journal, *f*, engages with the first, and has the friction pulley *c*, attached to it; such journal, *f*, being projected from the loom frame, B, or some suitable standard.
50 The friction strap band, *d*, is passed par-

tially around the circumference of the pulley, and has one end made fast to an adjusting screw, *g*, the other being connected with the lower end of the longer arm of the bent lever, *e*.

The adjusting screw extends through a fixed stud, *h*, and has a nut, *i*, screwed on it and against the stud. The said bent lever turns on a fulcrum or pin, *k*, supported by the loom frame the shorter arm of the lever
60 being made to stand about horizontally and to have a notch or bearing *l*, for the reception and support of the journal *m* of the yarn beam. Thus the said journal instead of being directly sustained in bearings, ap-
65 plied to the loom frame in the ordinary manner will be upheld by the lever and consequently the weight of the beam and the yarn thereon will tend to turn the lever on its fulcrum and draw the friction strap
70 against the periphery of the pulley. The amount of friction therefore will be the greatest when the beam is full of yarn and such friction will diminish in proportion or
75 approximately so as the yarn is drawn off the beam. The gear of the friction pulley being made to revolve with the beam as a matter of course will draw the pulley against the strap.

I claim—

1. The improvement in regulating the tension of the warp of a loom, the same consisting in so combining the yarn beam with the friction apparatus substantially as described, that the gravitating power or weight of the
85 yarn on the beam as such power or weight may diminish during the unwinding of the yarn on the beam, while the weaving process is being carried on, shall operate to decrease the friction on the beam.

2. The arrangement of the yarn beam and the lever of the above described friction apparatus applied by gearing or its equivalent to the yarn beam as described.

In testimony whereof, I have hereunto set
95 my signature.

LUTHER R. WATTLES.

Witnesses:

R. H. EDDY,
F. P. HALE.