B. Saunders.

Let-Off Motion.

No. 62,369. Patented Feb. 26, 1867.

Fig. 1.

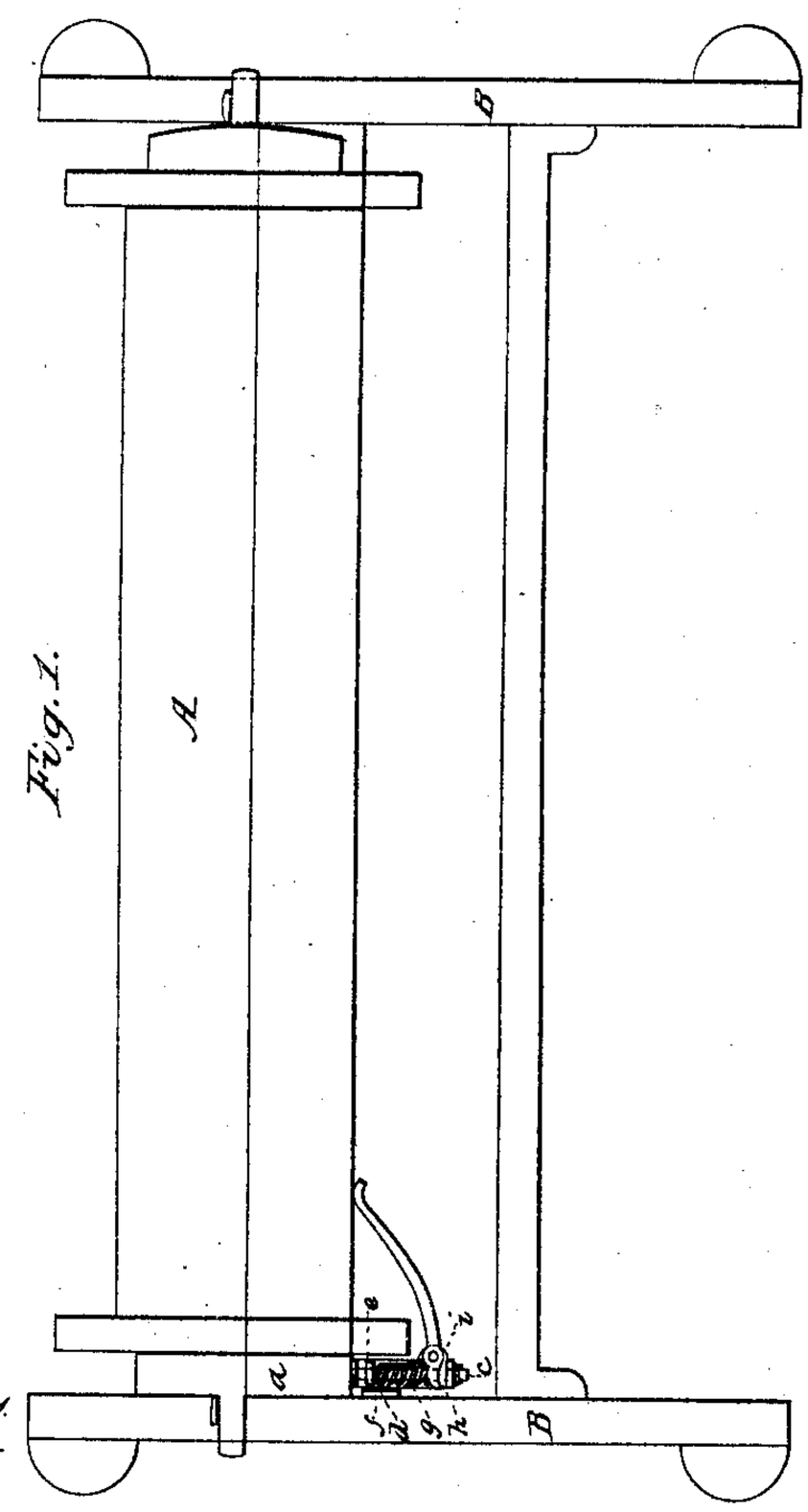


Fig. 2.

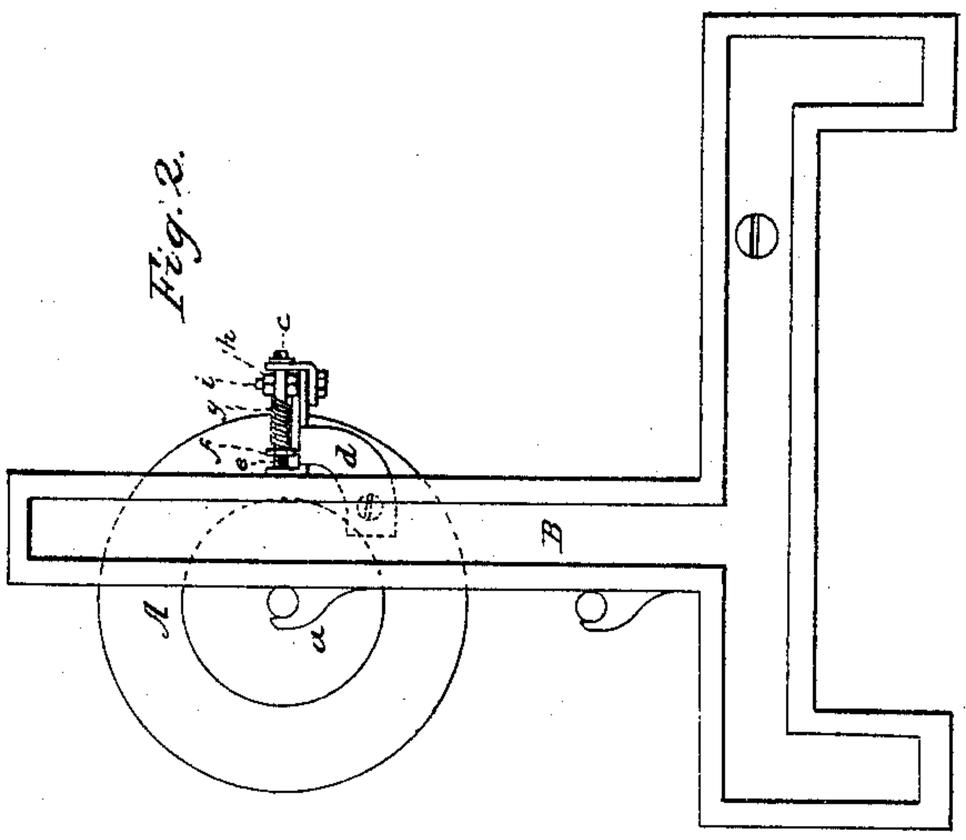


Fig. 3.

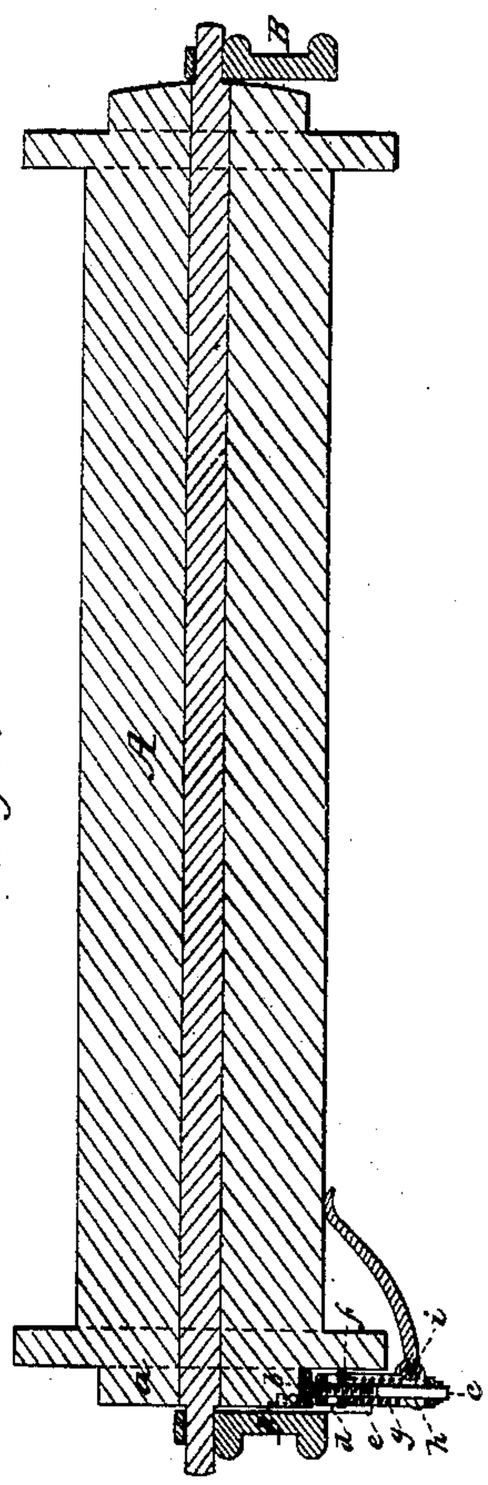
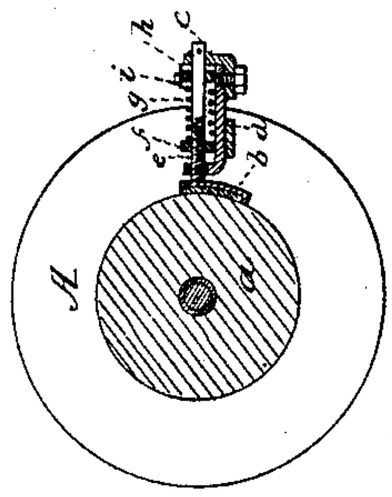


Fig. 4.



Witnesses.
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F. P. Hale Jr.

Inventor.
Benjamin Saunders
by his attorney
R. H. Eddy.

United States Patent Office.

BENJAMIN SAUNDERS, OF NASHUA, NEW HAMPSHIRE, ASSIGNOR TO HIMSELF AND ALBERT H. SAUNDERS, OF SAME PLACE.

Letters Patent No. 62,369, *dated February* 26, 1867.

IMPROVEMENT IN FRICTION APPARATUS FOR YARN-BEAMS OF WARP-DRESSERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL PERSONS TO WHOM THESE PRESENTS SHALL COME:

Be it known that I, BENJAMIN SAUNDERS, of Nashua, in the county of Hillsboro, and State of New Hampshire, have invented an Improved Friction Apparatus for the Yarn-Beam of a Warp-Dresser; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view.

Figure 2, a side elevation; and

Figure 3, a horizontal section of a warp-dresser beam, and my friction apparatus applied to it and its frame.

Figure 4 is a vertical section taken through the friction-wheel or head and brake of such apparatus.

My invention is for the purpose of obtaining uniformity of tension on the yarn while being removed from the beam of the dresser. As the cylinder of yarn on the beam may decrease in diameter the force of retardation of the beam, if uniform, would require a gradual increase of force on the yarn to effect its removal from the beam. By a gradual diminution of the force of retardation of the beam during the unwinding of the yarn, we shall be able by my mechanism to maintain nearly, if not entirely, an equality of tension on the yarn.

My present invention differs materially from that described in the United States Patent No. 45,082, granted to me on the 15th day of November, A. D. 1864, although being for a like purpose. It is much better in its operation and results. It avoids the use of a heavy weight to rest on the yarn and bear against the side of the beam head. Furthermore, it contains a means of equalizing or overcoming or diminishing the friction or force of retardation of the beam as circumstances may require, and this when the beam is full as well as when it may be nearly empty of yarn.

In the drawings, A is the beam or roller from which the yarn is to be unwound, and B is a part of the dresser-frame by which such roller is supported. Against one head of the roller or beam, or on its shaft, I affix a friction-wheel, *a*, against the periphery of which I apply a brake, *b*, affixed on the end of a horizontal slide-rod, *c*, such slider being supported within and by a bracket, *d*, affixed to the frame B. A male screw, *e*, is made on the slide-rod and provided with a nut, *f*, which is screwed on it. A helical spring, *g*, encompasses the rod, and at one end rests against the nut. The other end of the spring abuts against the shorter arm of a bent lever, *h*, whose fulcrum, *i*, is supported by the said bracket. The longer arm of the said lever rests near its outer end against the curved surface of the mass of yarn when on the beam, against which it will be pressed by the reactive power of the spring. As the yarn diminishes on the beam the longer arm of the lever will continue to approach the axis of the beam. Consequently the pressure of the spring, tending to force the brake against the friction-wheel, will be gradually diminished. By means of the screw and nut the friction may be increased or diminished in the mean time, as may be desirable, as will be readily understood by persons skilled in the art to which my invention appertains.

I claim the combination as well as the arrangement of the friction-wheel *a*, or its equivalent, the brake *b*, the slide-rod *c*, the spring *g*, and the lever *h*, the whole being applied together and to the yarn-beam A, substantially in manner and for the purpose set forth.

I also claim the combination of the screw *e* and nut *f*, with the slider *c*, the brake *b*, the friction-wheel *a*, and the lever *h*, the whole being applied together and to the yarn-beam, substantially and for the purposes as described.

BENJ. SAUNDERS.

Witnesses:

FRANK G. NOYES,

JAMES B. HALL.