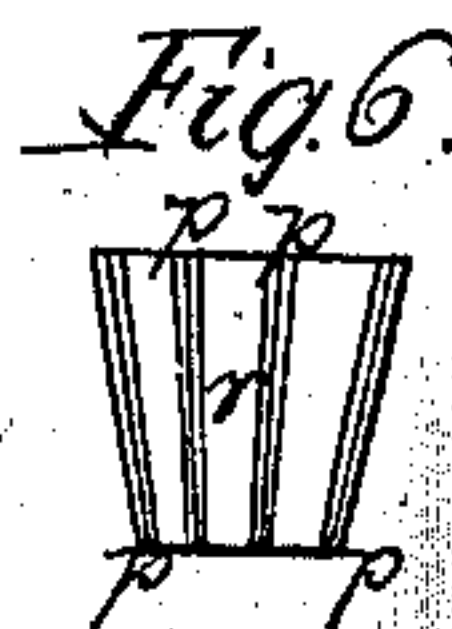
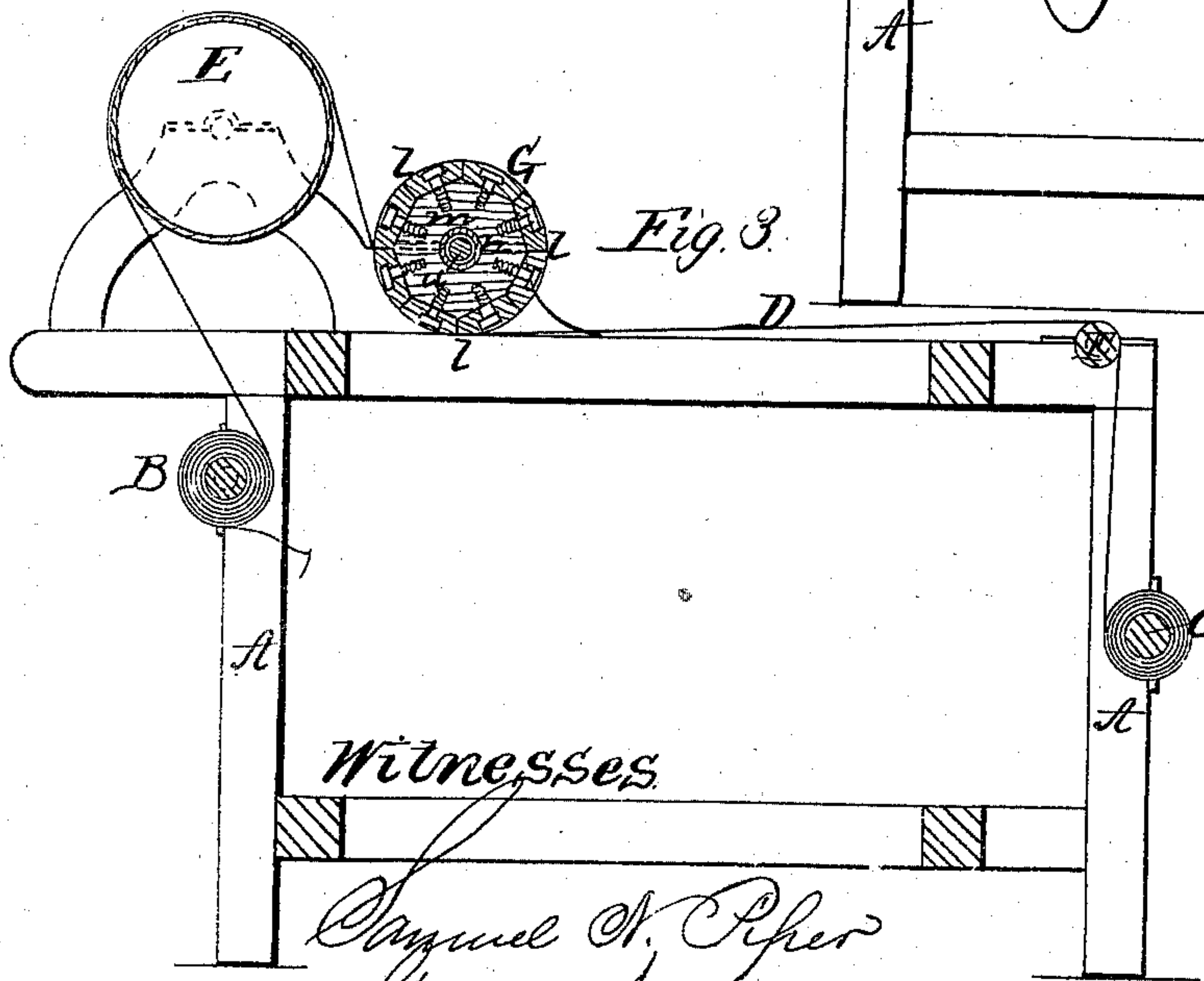
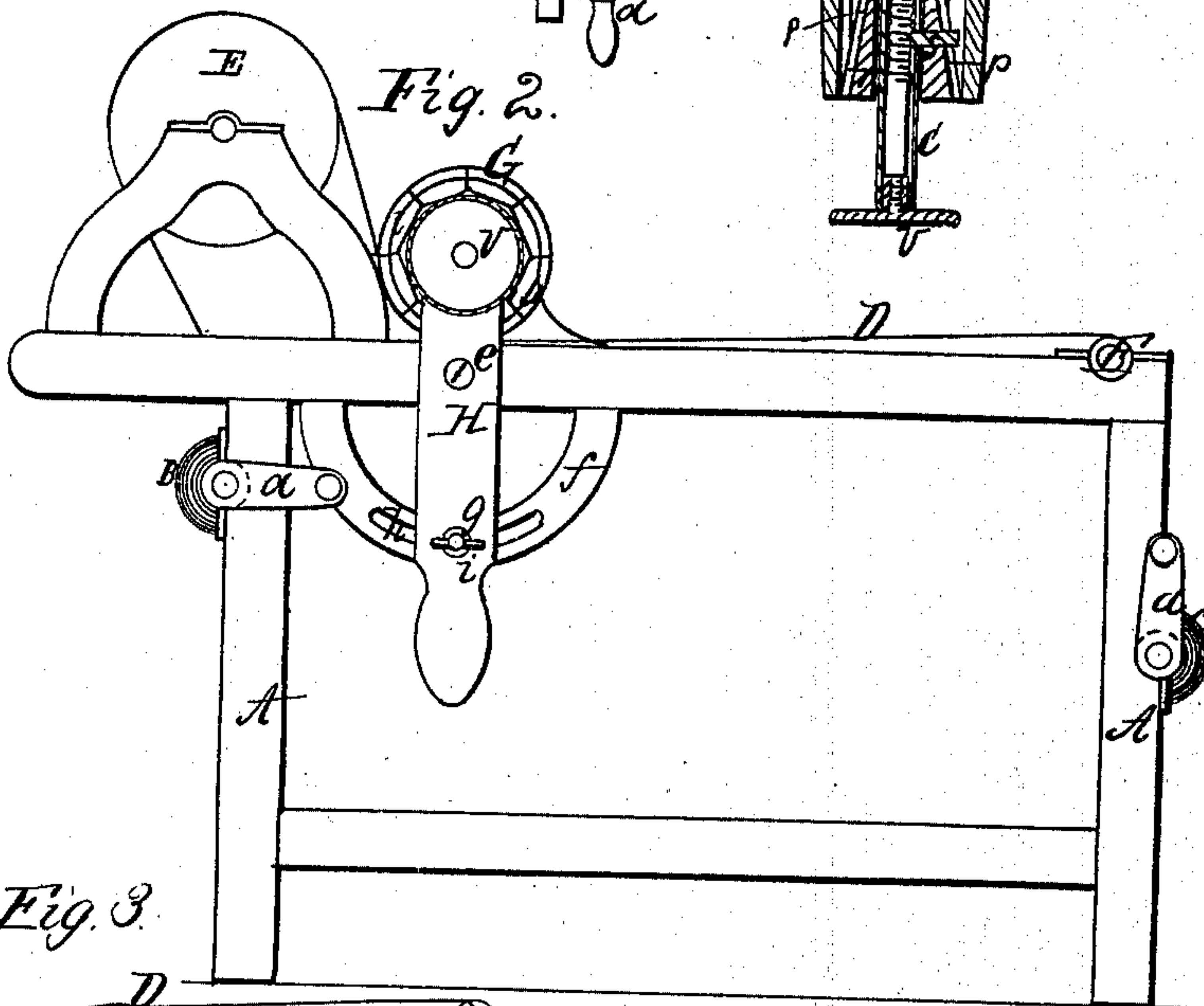
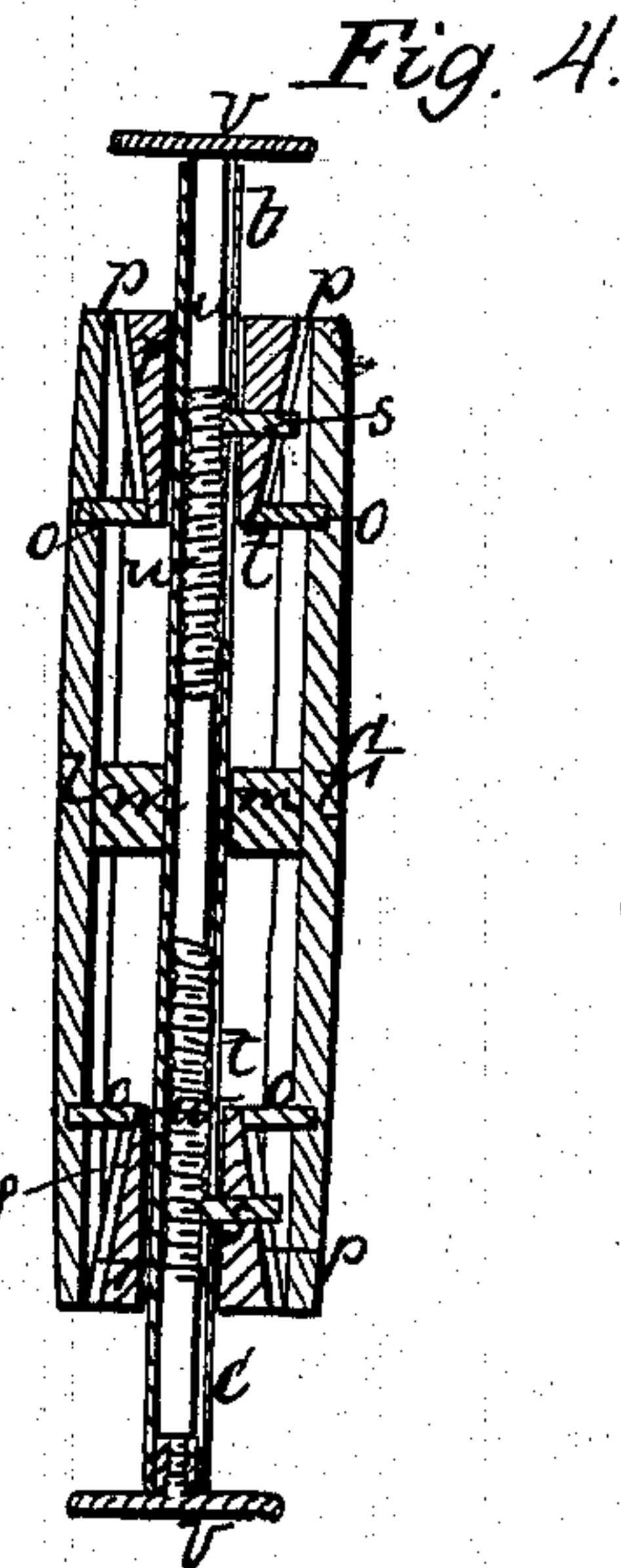
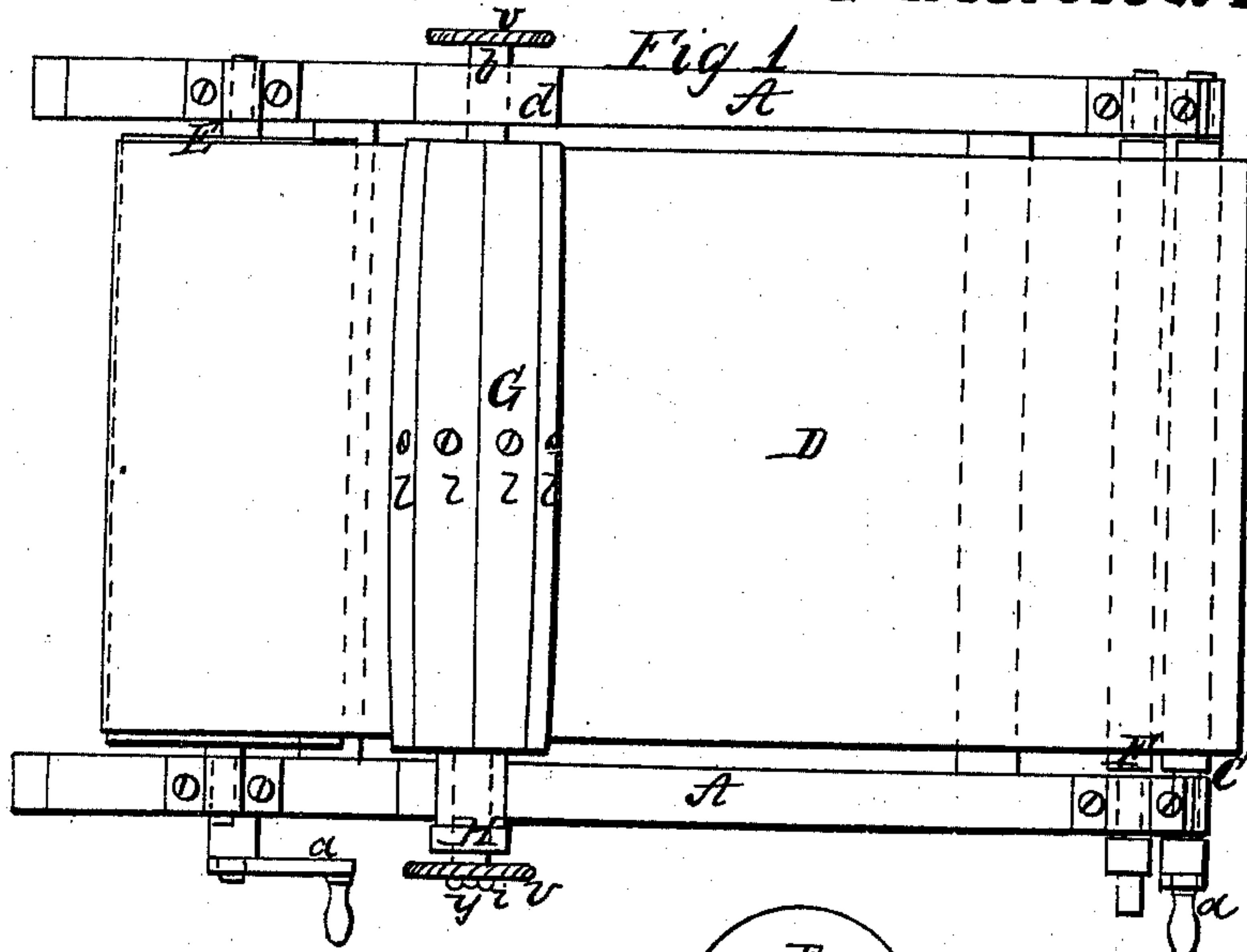


J. Greenwood. Cloth Stretching Mach.

N^o 61,934.

Patented Feb. 12, 1867.



Witnesses

Samuel W. Piper
George Andrew

Inventor
James Greenwood
by his attorney
R. W. Hild

United States Patent Office.

JAMES GREENWOOD, OF CLINTON, MASSACHUSETTS.

Letters Patent No. 61,934, dated February 12, 1867.

MACHINE FOR STRAIGHTENING THE WEFT OR FIGURES OF TEXTILE FABRICS.

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, JAMES GREENWOOD, of Clinton, in the county of Worcester, and State of Massachusetts, have invented a new and useful Machine for Straightening the Weft or Figures of a Textile Fabric; 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; and

Figure 2, a side elevation of such machine.

Figure 3 is a longitudinal section of it.

Figure 4 is a longitudinal section of its straightening-roller.

Figure 5 is a transverse section of such roller.

In the process of finishing or preparing either printed or woven fabrics, or pieces of cloth having figures either printed or interwoven upon or in them, the weft threads are liable to be drawn out of straight lines, or to become more or less crooked, whereby the figures are rendered uneven or out of proper shape. The purpose of my invention is to effect the restoration of the fabric to its normal condition; that is, to strengthen the weft or filling threads which may have been drawn more or less awry. To this end I make use of certain rollers or their equivalents for supporting the piece of cloth, straining it, and moving it longitudinally; and with such I employ an expansible and contractible roller, viz, a roller so constructed as to be capable of being expanded in diameter at its ends, while its middle is inexpandible; or, what would be an equivalent for such roller, one made so as to be either expansible or contractible diametrically at its middle, and inexpandible at its ends. These devices I arrange and construct in manner as hereinafter explained, although I do not confine my invention to such an arrangement or construction of them, as there may be variations of such without materially affecting or changing the principle of my invention.

In the drawings, A denotes a frame, which supports at one end a beam or roller, B, and at the other end another such beam or roller, C, a piece of cloth, D, to be operated on being wound on one roller, and extended to and for the purpose of being wound upon the other. The shaft of each of these rollers may be provided with a crank, *a*, or other proper means for putting the roller in revolution on its axis. Over one of such rollers, viz, that marked B, is a large roller or drying-cylinder, E, which may be hollow to receive hot air or steam for the purpose of heating such roller. There is also above the roller C a guide-roller, F. Between the roller F and cylinder E, and near to the latter, I arrange, in manner as represented in the drawings, what I term a straightening-roller, G, one of whose journals, *b c*, is supported in a stationary box, *d*, the other being supported and having a bearing within the upper arm of a lever, H, applied to one side of the frame. The said lever turns on a fulcrum, *e*, projecting from the frame. A semicircular limb, *f*, is fastened to the frame and arranged against the longer arm of the lever. A clamp-screw bolt, *g*, goes through a slot, *h*, in the limb, and also through the longer arm of the lever, and has a nut, *i*, screwed upon its screw, the object of such limb, clamp, screw, and nut being to fix the lever in position after being turned on its fulcrum, so as to carry one end of the straightening-roller either toward or away from the cylinder E. The said straightening-roller may be made as follows, that is to say, it may consist of a series of elastic staves or portions, *ll*, made like barrel staves, and arranged around and fastened at their middles to a polygonal block, *m*, fixed concentrically on the middle of a tubular shaft, *n*. From each of such staves two dove-tailed studs *o o* project, they being arranged at, or about at, equal distances from its middle, and on opposite sides thereof. They enter into dove-tailed grooves *p p*, made in two conical frusta *r r*, (see fig. 6, which is a side view of one of such frusta,) which are arranged on the tubular shaft *n*, and so as to be capable of being slid or moved longitudinally thereon. From each of such frusta a projection, *s*, extends into and through one of two slots *t t*, made in the shaft lengthwise. A rod, *u*, going through the shaft, and having milled heads *v v* on its ends, and being fixed on the shaft so as to be capable of being revolved thereon without at the same time having an endwise movement, has two male screws *w w* formed on it, one being a right and the other a left screw. These screws screw into the projections *s s* of the two frusta; and thus, when the rod is revolved, the frusta may be caused to either approach toward or recede from each other, according to the direction in which the rod may be revolved. These movements of the frusta will cause the roller to be either expanded or contracted in diameter at each of its ends. The straightening-roller is borne against the cloth, or,

in other words, the cloth, by going underneath it in manner as represented in the drawings, and in being stretched, will be borne against the rollers. During the winding of the cloth upon one beam, and the unwinding it from the other, it will be drawn against the straightening-roller, and will put the latter in revolution. Now, should the weft of the cloth not be straight in any part of the piece, it may be rendered straight by the action of the roller G, which, by being expanded at its ends, will cause the piece of cloth to be drawn forward more at its selvages than at its middle. So, in case the roller is made larger in diameter in its middle than it is at its ends, it will cause the cloth at its middle to move forward faster than it will at its selvages. In this way the cloth may be stretched so as to bring its warps into their normal state. But when the cloth at or near one selvedge requires to be strained or allowed to pass on faster than at the other, this may be effected by means of the lever H, that is, by turning it so as to cause the roller to bear more at one end against the cloth than it does at the other. This machine in practice has been found to be of great utility. The cloth while being passed through it should be in a wet or moist state.

I claim the machine substantially as and for the purpose described, that is, as composed not only of a straightening-roller made expansible and contractible as set forth, but of rollers, or their equivalents, for presenting the cloth to the action of such roller, and moving such cloth with respect to it, substantially as explained.

I also claim the combination of the adjustable lever, or its equivalent, with the straightening-roller, supported as described, and combined with rollers, or their equivalents, for presenting a piece of cloth to the action of such roller, in manner and for the purpose as set forth.

JAMES GREENWOOD.

Witnesses:

SAMUEL N. PIPER,
R. H. EDDY.