

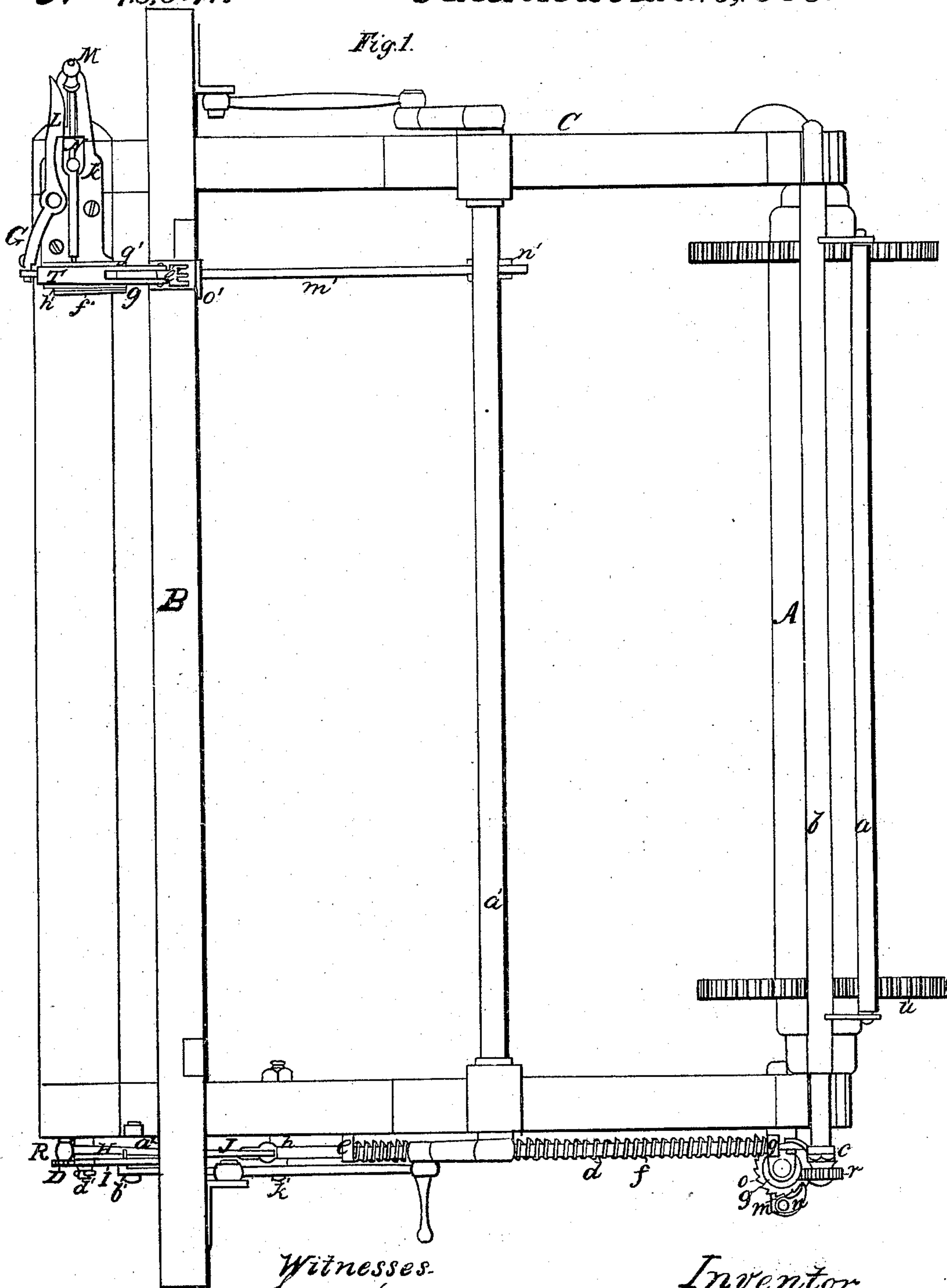
W. F. Drayer. Sheet 1-3, Sheets.

Loom.

N^o 7,8941.

Patented Jun. 16, 1868.

Fig. 1.



Witnesses.
J. N. Piper.

Lauritz Mollen

Inventor.
William F. Drayer.

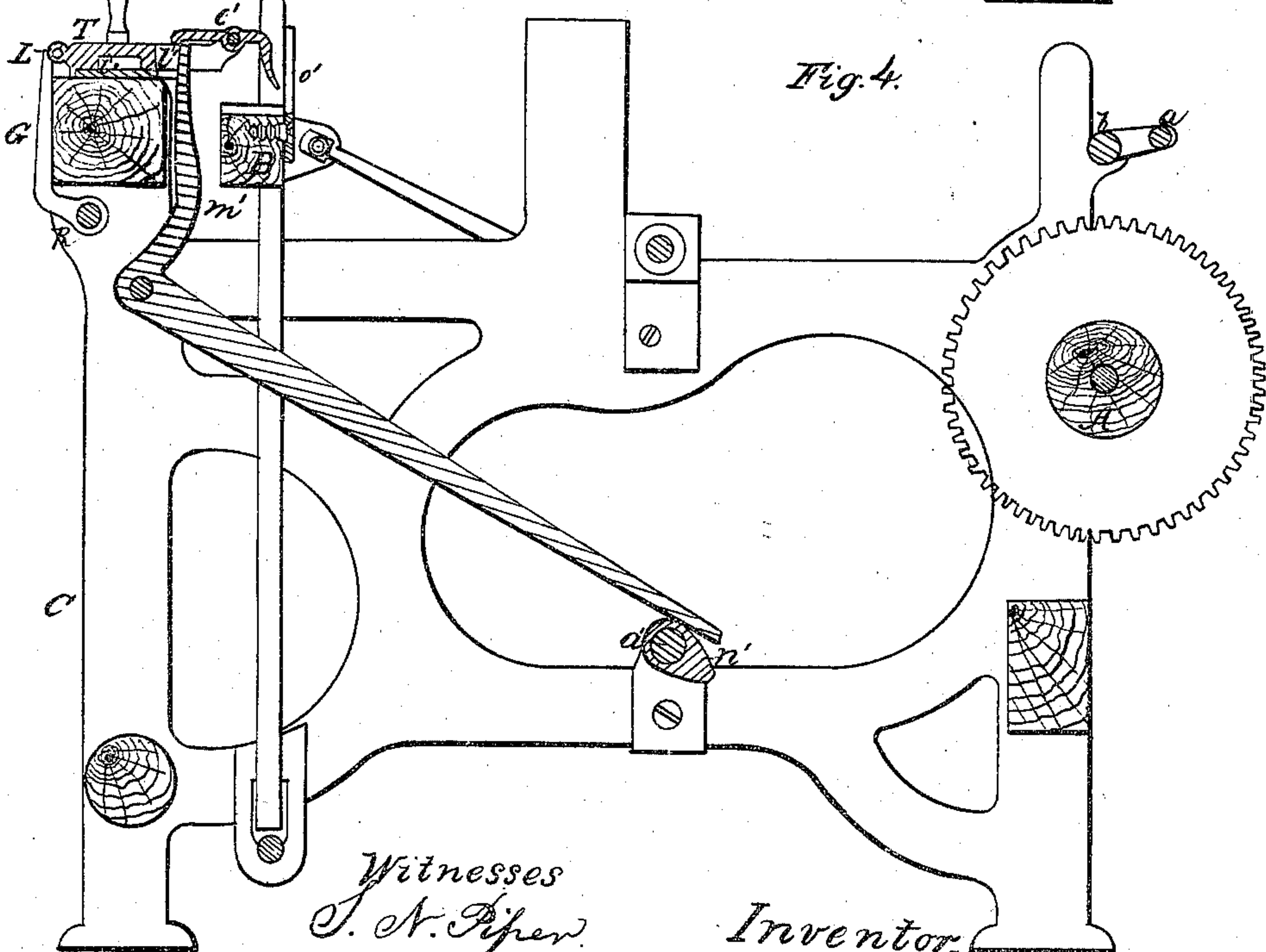
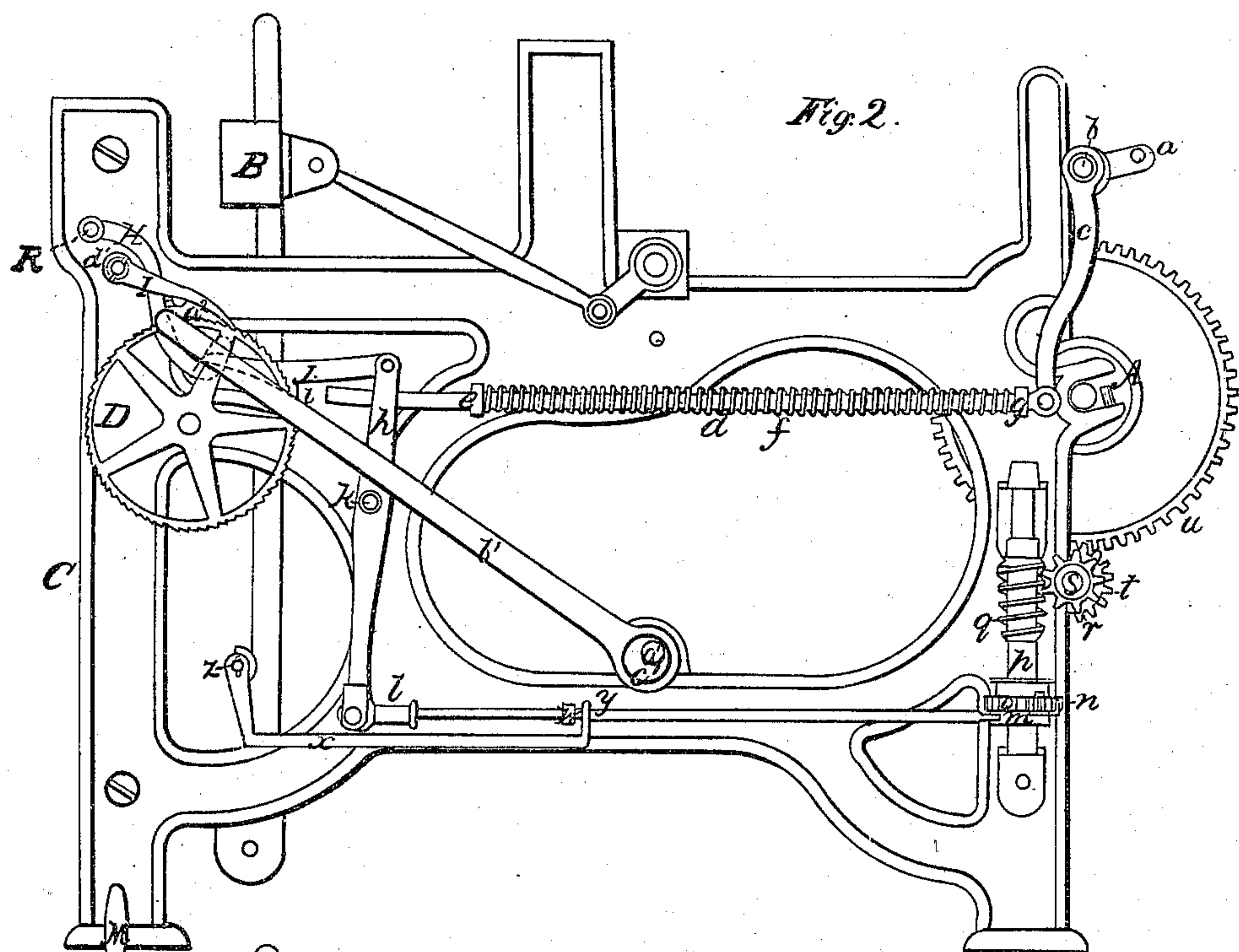
Sheet 2-3 Sheets.

W. F. Draper.

Loom.

N^o 78,941.

Patented Jun. 16, 1868.



Witnesses
J. A. Piper. *Inventor.*
Lauritz Höller *William F. Draper.*

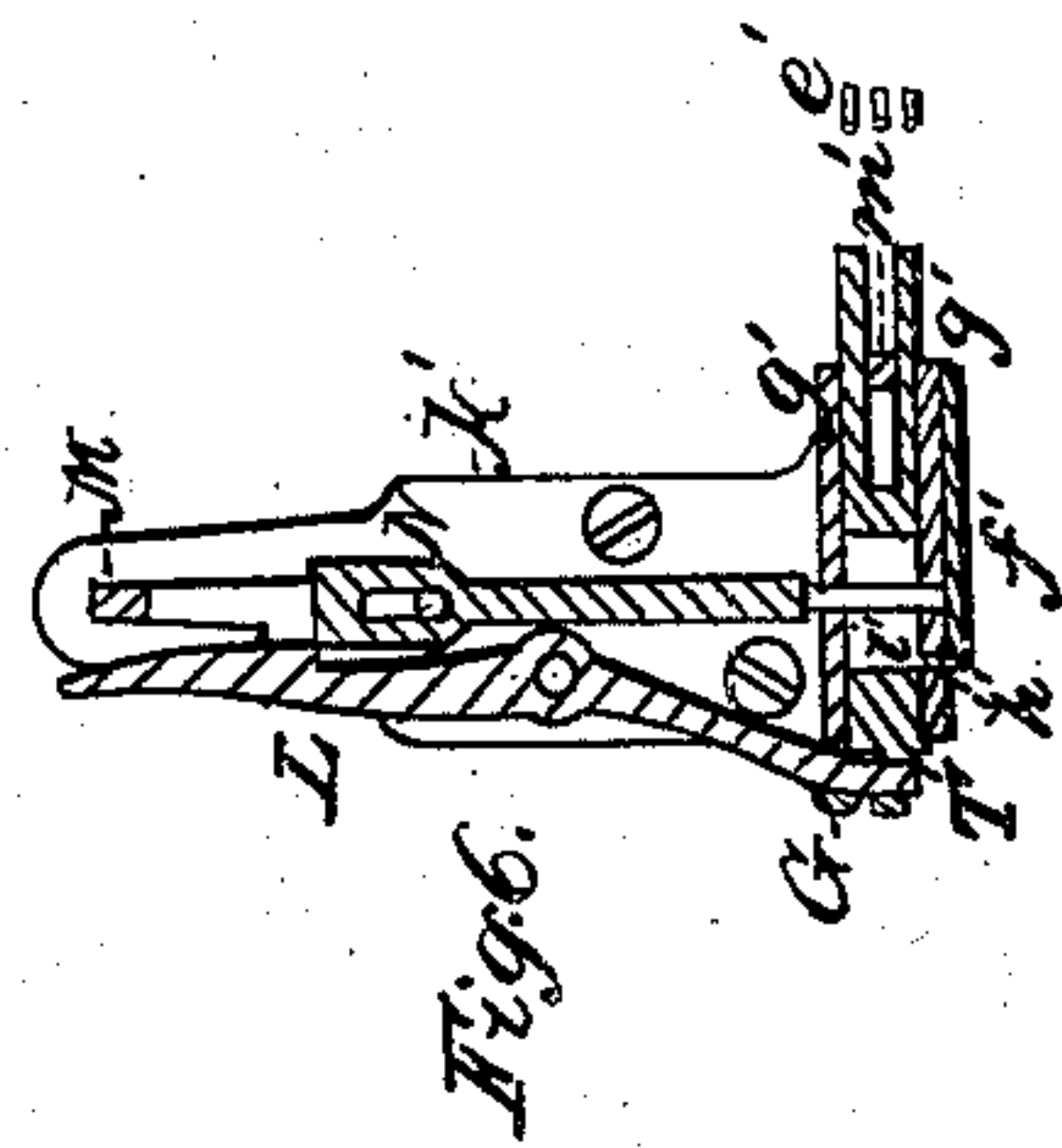
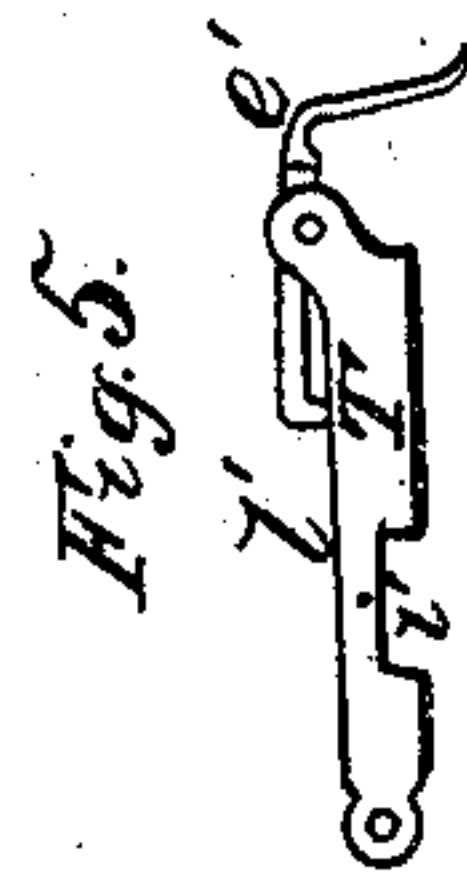
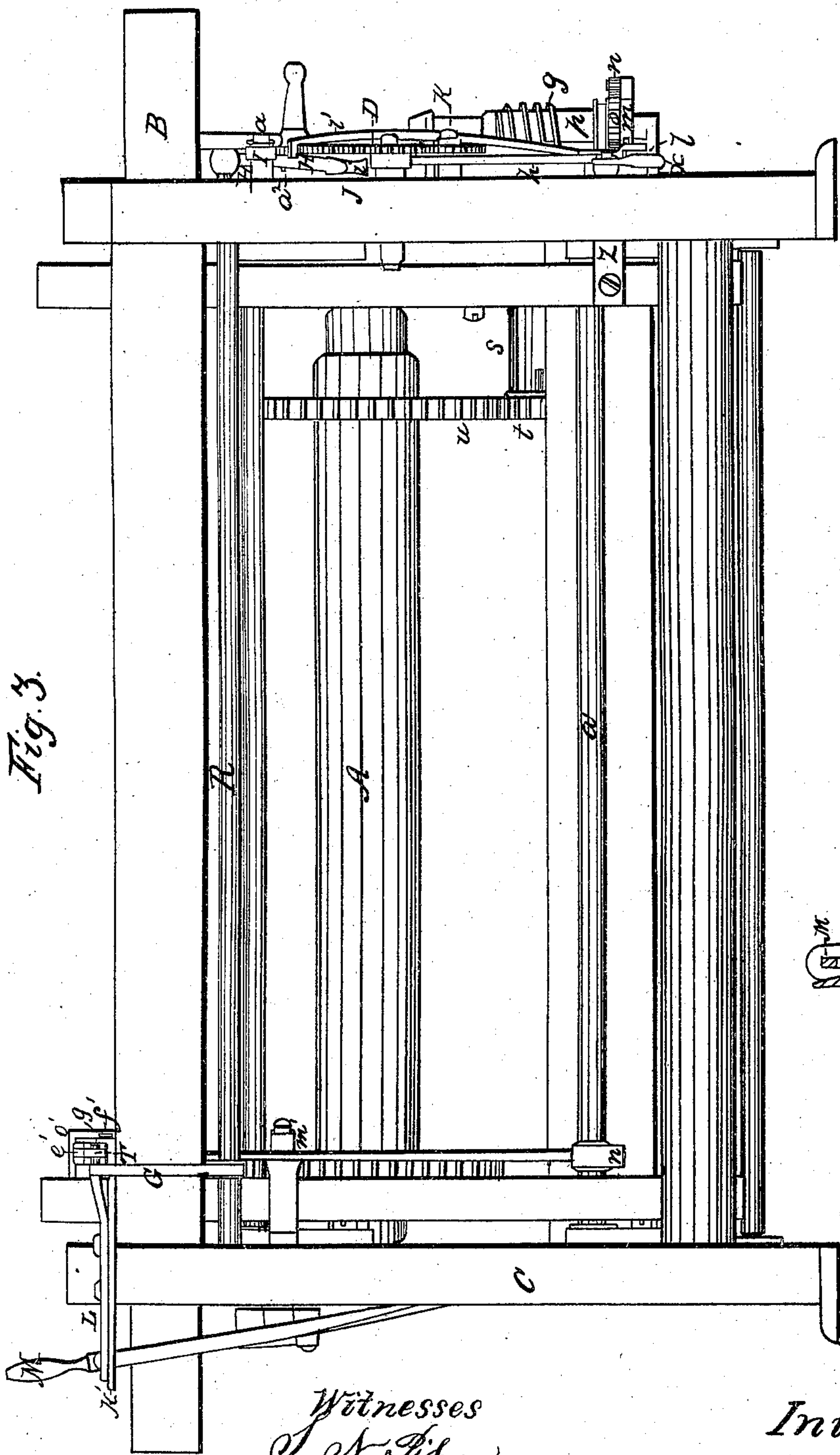
W. F. Draper.

Loom.

Sheet 3-3 Sheets.

N^o 78,941.

Patented Jun. 16, 1868.



Witnesses
S. A. Piper.
Lauritz Keller

Inventor.
William F. Draper

United States Patent Office.

WILLIAM F. DRAPER, OF HOPEDALE, MASSACHUSETTS.

Letters Patent No. 78,941, dated June 16, 1868.

IMPROVEMENT IN LOOMS.

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

TO ALL PERSONS TO WHOM THESE PRESENTS MAY COME:

Be it known that I, WILLIAM F. DRAPER, of Hopedale, in the county of Worcester, and State of Massachusetts, have invented a new and useful Improvement in Looms for weaving cloth; 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 an end elevation of a loom-frame with the yarn-beam and various other parts, and with my invention connected therewith.

Figure 3 an elevation of the breast-beam side of the loom-frame and the mechanism immediately adjacent thereto.

Such other figures as may be necessary to the illustration of my invention will be hereinafter referred to and explained.

The purpose of my invention is to prevent the formation in the cloth, while it is being woven, of what weavers, in common parlance, term thick or thin places. The production of the thin places results from the continued operation of either the take-up or let-off mechanisms, or both of them, after the breakage or running out of a filling or weft-thread, and the shifting of the driving-belt from the fast to the loose pulley, occasioned by the movement of the shipper. The production of the "thick places" usually takes place by over-action of the means adopted to prevent the thin ones, or by other causes well known to weavers.

In order to accomplish the above-mentioned purpose, I have combined with the take-up and let-off mechanisms, and the stopping-mechanism of a loom, certain devices or mechanism, to be hereinafter described; and, furthermore, I have combined with the last-mentioned mechanism and the shipper a means or mechanism by which the shipper, during its inward movement, will cause the filling-fork slide to be released from the mechanism which I have applied to it for holding it back, and thereby effecting the purpose of my invention.

In the drawings, A denotes the yarn-beam, B the lay, C the loom-frame, and D the take-up ratchet of the cloth-beam or roller.

In such drawings, I have represented what is termed the "Bartlett let-off mechanism," one well known to weavers. My invention, however, I do not confine to its connection with this particular let-off mechanism, as almost any other well-known one may be substituted.

Of the Bartlett let-off mechanism, *a* denotes the whip-roller, over which the yarn, in its course toward the breast-beam, passes from the beam A. *b* is the whip-roll shaft; *c*, an arm, extending down from the said shaft, and being jointed to a slide-rod, *d*, which is supported by and so as to slide freely through a bracket, *e*, projecting from the loom-frame.

A helical spring, *f*, encompasses the rod, and, by bearing against a shoulder, *g*, thereof, and also against the bracket, elevates the whip-roller, so as to give tension to the warps.

Ordinarily there is a collar or shoulder fixed on the rod, to act against the lever *h*, through whose upper arm the rod passes, but I dispense with such collar, employing, instead of it, an arm, J, provided with a shoulder or projection, *i*. This arm, J, I joint to the upper arm of the lever *h*, and extend it forward directly over and upon the finger or arm H, projecting from the rod R, which usually extends along underneath the breast-beam, and has an arm, G, projecting up from it directly in rear of and against the end of the stop-motion slide T. The said projection *i*, when the arm J is in its lowest position, will be met by the end of the rod *d*, during a forward movement of such rod, and will thereby move the lever *h* on its fulcrum, *k*.

The lower arm of the lever *h* is jointed to one end of a rod, *l*, which, at its other end, is jointed to a horizontal lever, *m*, carrying an impelling-pawl, *n*, to engage with a ratchet, *o*. This ratchet is fixed on an upright shaft, *p*, provided with a worm or screw, *q*, to engage with a worm-gear, *r*, fixed on a horizontal shaft, *s*. This shaft *s* has a pinion, *t*, fixed on it, to engage with a gear, *u*, constituting one head of the yarn-beam A.

On the slide-rod *l* is a collar, *w*. A rod, *x*, having an arm, *y*, applied to the rod *l* so as to slide thereon, extends from the collar *w* to and is jointed to an arm, *z*, extending from the sword of the lay.

When the rod *d* is advanced by the movement of the whip-roller, caused by the strain of the yarn thereon, such rod will be forced against the shoulder, *i*, of the arm *J*, and will thereby move the lever *h*, so as to cause the impelling-pawl *n* to recede on the ratchet *o*. Next, the forward movement of the lay, to beat up the filling, will cause the pawl to be moved, so as to turn the ratchet, and thus produce the delivery of yarn from the beam.

The usual cam-shaft is shown at *a'*, the draw-pawl, *b'*, of the take-up ratchet being jointed to the wrist of a crank, *c'*, fixed on the end of this shaft. The retaining-pawl of the said ratchet is shown at *I*, as applied to a stud, *d'*, projecting from the loom-frame. From the said retaining-pawl a stud, *a''*, projects, and extends directly over and upon the arm *H*, by which means the arm *H*, while being raised up, will carry with it the said pawl *I*, so as to force it out of action with the ratchet.

The filling-fork of the "stop-motion" or mechanism is shown at *e'* as jointed to the slide *T*. A vertical section of the loom, taken through this slide, is represented in Figure 4.

Figure 5 is a side view of the slide *T*, and

Figure 6 a horizontal section of it, its spring-catch *f'*, and other parts, on the shipper-plate.

The said spring-catch (which consists of a spring and a stud or pin) is fastened to the side of one of the vertical guides *g' g'*, between which the slide *T* plays. The stud of the catch, shown at *h'*, extends through a hole in the guide *g'*, so as to pass into a notch, *i'*, made in the slide *T*, as shown in fig. 5.

Furthermore, a slider, *N*, placed on the notched plate, *h'*, of the shipper *M*, or arranged thereon, as shown in figs. 1 and 6, extends through the next adjacent guide, *g'*, and the notch *i'*, and against the spring of the catch *f'*.

When the shipper is moved inward, for the purpose of throwing the driving-belt from the loose to the fast pulley of the loom, it will meet the outer end of the slide *N*, and will force such slide endwise, and against the spring-catch *f'*, so as to throw it out of action with the slide *T*, in order to allow such slide to be advanced by the action of the shipper against a lever, *L*, arranged on the shipper-plate, and jointed to the slide *T*.

The tail of the filling-fork has a hook, *l'*, to operate in connection with a lever, *m'*, arranged as represented in figs. 1 and 4.

A cam, *n'*, fixed on the cam-shaft, is to operate against the lever, so as to move it while the cam-shaft is in revolution.

The grid of the fork is shown at *o'*. This grid, the fork *e'*, the lever *m'*, the cam *n'*, the slider *T*, the lever *L*, the shipper-plate, with the shipper and its belt-fork, constitute what is usually termed the stop-motion or mechanism, its construction and operation being well understood by weavers.

When a filling-thread runs out or breaks, the slide *T* will be forced back, and, as a necessary consequence, the shipper or shipper-lever will be thrown out of its holding-notch of the shipper-plate, and by its spring will be moved so as to cause the driving-belt to be moved from the fast to the loose pulley. The loom then ought to stop, but, owing to the momentum generated in its parts, it will continue in operation generally for one or more picks, such movement being productive of the evil consequence hereinbefore mentioned.

With my addition to the loom, its take-up and let-off motions or mechanisms will be arrested in their movements as soon as the slide *T* may be forced back, for while it so goes back, the spring-catch *f'* will slip into the notch of the slide *T*, and thus will prevent the slide from moving forward. In going backward, the slide *T* will be forced against the arm *G*, and move it, and cause it to revolve or turn the rod *R* in a manner to elevate the arm *H*, and cause it to simultaneously force upward the retaining-pawl, *I*, of the take-up ratchet *D*, and the arm *J*, with the shoulder *i*. This will prevent the operation of the take-up and let-off mechanisms or motions.

When the shipper is next moved, in order to put the loom again in operation, the slider *N* will be moved against the catch *f'*, so as to force it out of the notch of the slider *T* so as to allow the slider to be moved by the lever *L*, when moved by the shipper in going into the holding-notch of the shipper-plate.

Sometimes I apply the arm *H* to the impelling-pawl of the take-up ratchet, so as to lift it instead of the retaining-pawl *I*, the effect in either case being to arrest the taking up of the cloth.

I am aware that, for the purpose of effecting the stoppage of the delivery of the yarn, as well as the taking up of the cloth, it has been customary to combine a pawl and rack and other mechanism with the retaining-pawl of the ratchet of the cloth-beam, and a slide-bar of the yarn-delivery motion, such being as represented and described in Letters Patent, No. 34,451, dated February 18, 1862, and granted to Albert Stockwell and B. D. Humes. Consequently, I make no claim to such as my invention.

The yarn-delivery mechanism described in the said patent had no depressible whip-roller such as used by me, and which, with other mechanism, serves to set back the impelling-pawl of the worm-shaft ratchet.

I therefore claim the arrangement and combination of the arm *J*, and its shoulder, *i*, or the equivalent of the latter, with the arm *H* and its actuating mechanism, the slide-rod *d* and its actuating mechanism, (inclusive of the vibratory whip-roller, or any equivalent therefor, placed over the yarn-beam,) and the lever *h* and other mechanism for setting back the impelling-pawl, *n*, of the ratchet *o*, the whole being substantially as explained.

I also claim the combination of the spring-catch *f'*, or its equivalent, with the stop-motion and the mechanism for actuating the retaining-pawl of the cloth-beam ratchet.

I also claim the combination of the slider *N*, or its equivalent, with the stop-motion and the spring-catch *f'*, applied to the slider *T* thereof, as and for the purpose specified.

WM. F. DRAPER.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.