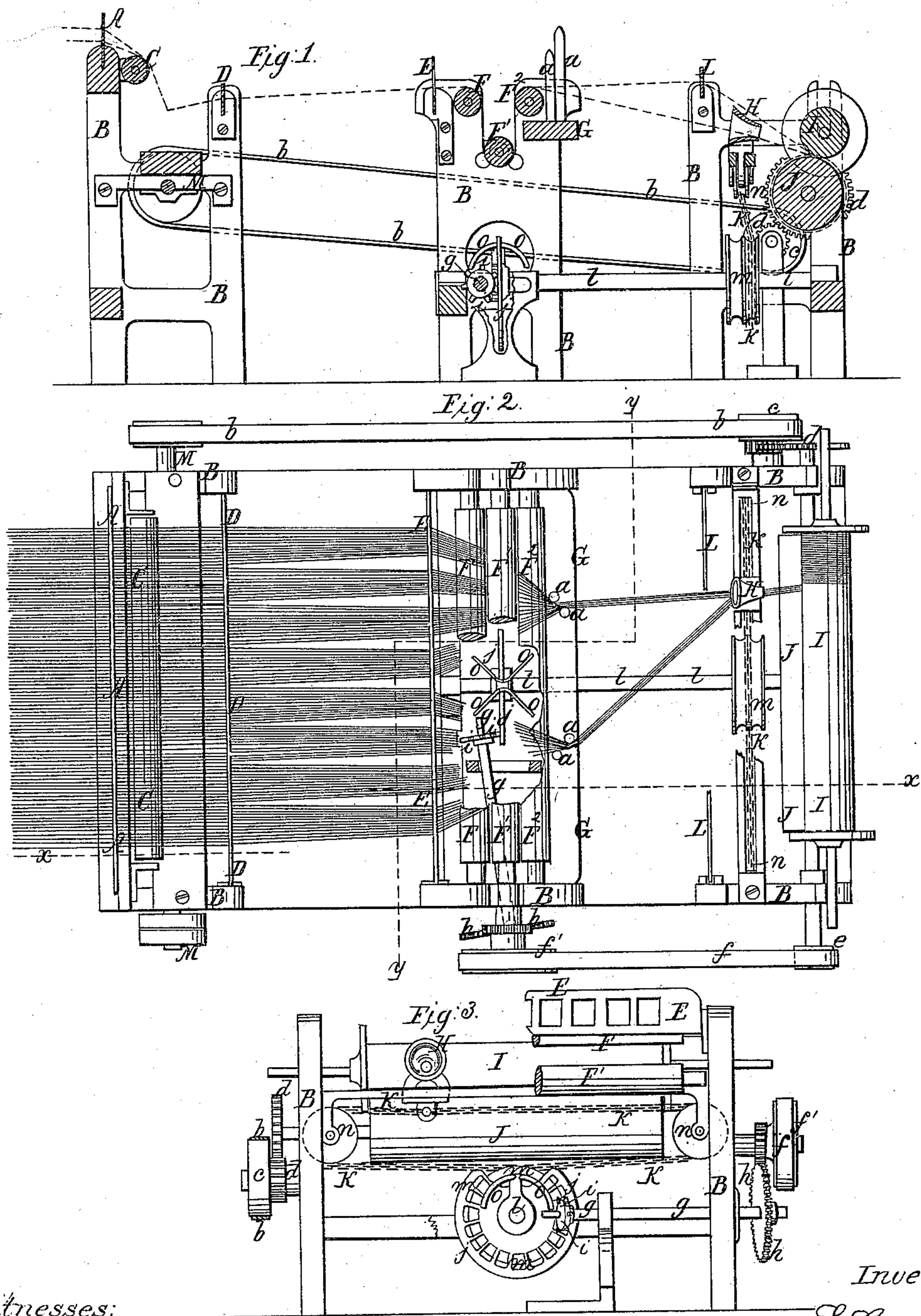


# Campbell & McFarlane. Warning Mach.

N<sup>o</sup> 99,843.

Patented Feb. 15, 1870.



Witnesses;  
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per  
*[Signature]*



# United States Patent Office.

SAMUEL CAMPBELL, OF PALMER, MASSACHUSETTS, AND DUNCAN McFARLANE, OF TROY, NEW YORK.

Letters Patent No. 99,843, dated February 15, 1870.

## IMPROVEMENT IN WARPING-MACHINES.

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

To all whom it may concern:

Be it known that we, SAMUEL CAMPBELL, of Palmer, in the county of Hampden, and State of Massachusetts, and DUNCAN McFARLANE, of Troy, in the county of Rensselaer, and State of New York, have invented a new and improved Skein-Warping Machine; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 represents a vertical longitudinal section of our improved skein-warping machine, the plane of section being indicated by the line *x x*, fig. 2.

Figure 2 is a plan or top view, partly in section, of the same.

Figure 3 is a vertical transverse section of the same, the plane of section being indicated by the line *y y*, fig. 2.

Similar letters of reference indicate corresponding parts.

The invention relates to warping-machines, and consists in certain novel features which will be more particularly specified hereafter.

The yarn is from the spools on the ordinary creels passed through a perforated plate, A, which is set up transversely at one end of the frame B of the warping-machine.

The frame B is of suitable material and size, and is arranged to support the entire machinery connected with this apparatus.

The yarn passes from the plate A over a transverse roller, C, through a drop wire box, not shown, and then through another perforated transverse plate, D, whose apertures are preferably all in line.

The plate A and D, and the roller C, are arranged in one group at one end of the machine, as shown in fig. 1, and form one end section of the same.

The middle section of the machine consists of a perforated transverse plate, E, of a set of three transverse rollers, F, F<sup>1</sup>, and F<sup>2</sup>, and of a cross-bar, G, which supports two or more pairs of vertical pins, *a a*.

The number of apertures in the plate E is considerably less than that in D, and the yarn is therefore, by the plate E, collected into eight, or more or less, skeins. These are passed over roller F, under F<sup>1</sup>, and over F<sup>2</sup>, and are then guided by the pins *a* to form but two or more collections of yarn.

The outer end section of the machine contains the traversing bugle H, the section beam I, and the cylinder shaft J.

The bugle receives reciprocating motion across the machine by a chain or rope, K, as hereinafter more fully described.

The bugle is a tubular or hollow conical thread-guide, which receives the yarn from the pins *a*, and collects it all in one single skein, which it deposits, during its reciprocating motion, upon the section

beam in layers, commencing alternately from opposite ends.

For dyeing and other purposes, it is very convenient to have the yarn in skein form on the section roller, as it is not so apt to become entangled when taken off. However, when it is desired to apply the yarn in the ordinary manner, the bugle, the pins *a*, and the plate E are removed, and a plate, L, having as many apertures as the plate D, is placed across the machine close to the section beam, as indicated in figs. 1 and 2. The yarn will then be guided to the section beam in separate threads, and will be wound around the same in the ordinary manner.

The machine is then readily converted into a regular warper, or into a skein-warper, as may be desired.

If desired, the middle section above described may be omitted, and the main parts E and *a* attached to the end section.

The motion is all obtained from a suitable driving-shaft, M, which is, by a belt, *b*, connected with a pulley, *c*.

The said pulley is, by gear-wheels *d d*, connected with the cylinder shaft.

On the cylinder shaft is a pulley, *e*, which drives a belt, *f*, that runs around a pulley, *f'*, which gears by wheels *h h* into a transverse shaft *g*. The shaft *g* is the driving-shaft of the gear, generally called mangle-gear.

A pinion, *i*, on the shaft *g*, meshes into a segmental toothed or perforated disk, *j*, on a longitudinal shaft, *l* the said shaft carrying a double-grooved pulley, *m*, to which the ends of the chain K are secured.

The chain passes over friction-rollers, *n n*, at opposite sides of the machine, and is then fastened to the bugle. As the shaft *l* is oscillated, the chain will be let out on one side and drawn in on the other side alternately, and the bugle will thereby be traversed.

The disk *j* has curved arms, *o o*, by which the pinion *i* will be thrown upon opposite sides of the disk, to reverse the motion of the shaft *l*.

This mechanism for operating the bugle may, however, be modified and considerably varied.

Having thus described our invention,

We claim as new, and desire to secure by Letters Patent—

1. The application to a warping-machine of a removable traversing bugle and operating mechanism, guide pins *a a*, and plate E, whereby it may be adapted to common or skein warping, in the manner described.

2. The combination of a bugle which collects, guides, and lays the yarn in skeins, with the pins *a a*, arranged as described.

Witnesses:

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