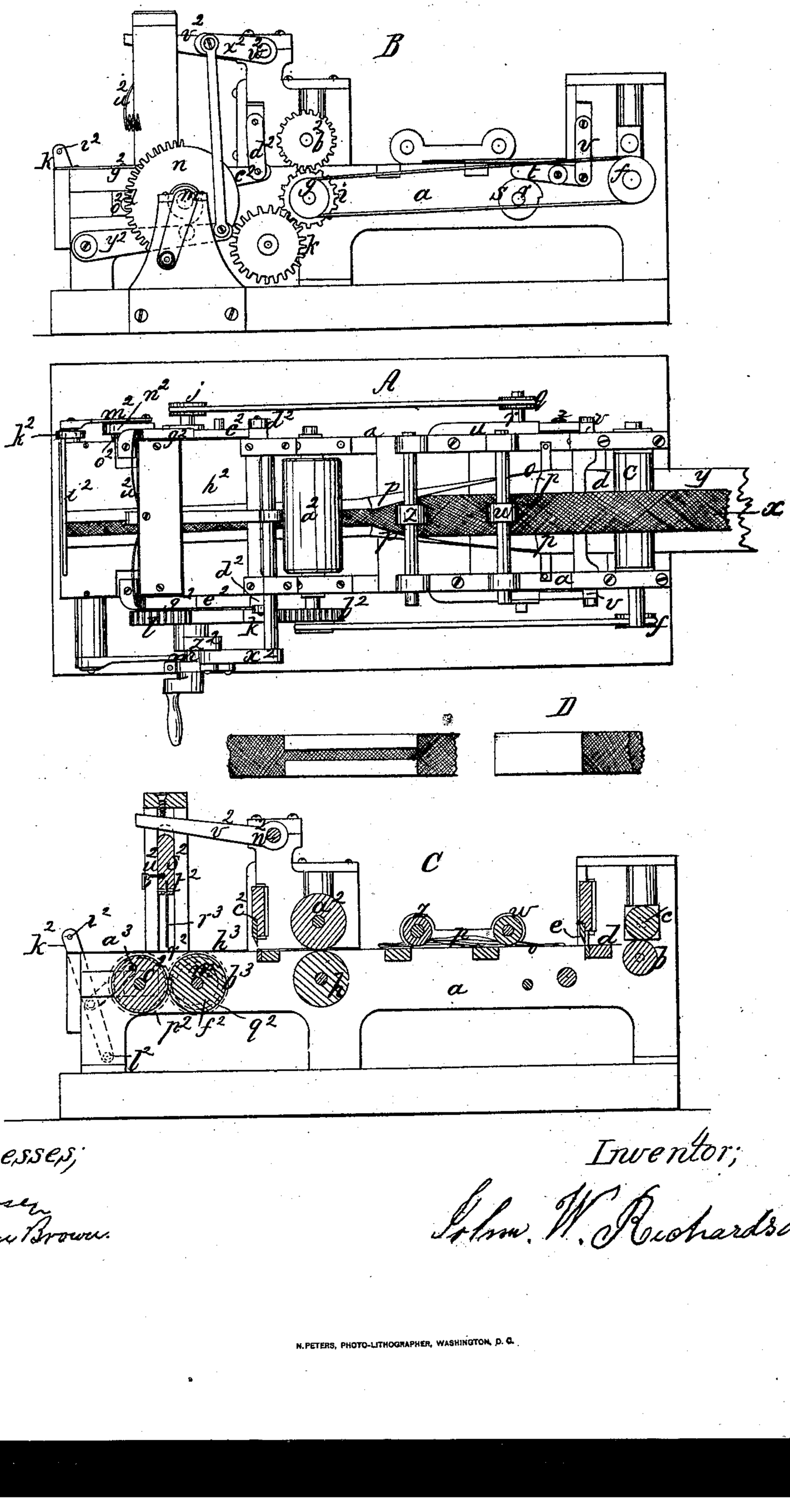
J. W. Richardson.

Boot Strap Mach.

No. 95,516 Patented Oct. 5, 1869.



Witnesses;
W. B. Lowe
C. Warren Brown.

Inventor;
John W. Richardson

United States Patent Office.

JOHN W. RICHARDSON, OF SOUTH BRAINTREE, MASSACHUSETTS.

Letters Patent No. 95,516, *dated October* 5, 1869.

MACHINE FOR MAKING AND WRAPPING WEBBING BOOT-STRAPS.

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

To all whom it may concern:

Be it known that I, JOHN W. RICHARDSON, of South Braintree, in the county of Norfolk, and State of Massachusetts, have invented a Machine for Making and Wrapping Webbing Boot-Straps; and I do hereby declare that the following, taken in connection with the drawings, which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practise it.

In the manufacture of "webbing" boot-straps, it is customary to envelop or wrap the whole or a large part of the webbing-strap in soft paper, to prevent the strap from becoming soiled, either by the maker of the boot in stitching the strap to the boot-leg, or by a person or persons trying on the boot.

My invention relates to the manufacture of such boot-straps, with particular reference to the employment of mechanism for automatically feeding the webbing and the enveloping-paper, cutting off the webbing and the paper, each to the respective length required for each strap, doubling or folding the opposite edges of the paper down upon the webbing, and folding the strap and cementing its opposite ends together.

My invention consists primarily in thus automatically preparing wrapped boot-straps.

The drawing represents a machine embodying my invention.

A shows the machine in plan.

B is a side elevation of it.

C, a vertical longitudinal and central section of it.

a denotes a frame-work, having a series of bearings for supporting the shafts or journals of the various rolls.

x denotes the strip of webbing, and *y* the strip of enveloping-paper. These strips are taken respectively from webbing and paper rolls, around which they are wound in continuous lengths, placed in any convenient location beyond the machine.

The strip of paper, which is wider than the webbing, enters the machine between two feed-rolls *b c*, and passes from the rolls over a bed, *d*, over which is a vertically-reciprocating cutter, *e*, which, receiving a downward movement at proper time, severs from the strip a piece, of a length to form the envelope or wrapper for the strap.

The lower feed-roll *b* has a positive intermittent rotative movement imparted to it, and the upper roll *c* is a presser-roll, kept down against the lower roll, or against the paper passing between the rolls, by suitable springs.

The roll *b* has its movement imparted to it by any suitable mechanism, that which I prefer being as follows:

Upon one end of the roll-shaft is a grooved pulley, *f*, banded to a pulley, *g*, on the shaft of a feed-roll, *h*, said shaft carrying a gear, *i*, meshing into and driven by an intermediate, *k*, driven by a gear, *l*, on a driving-shaft, *m*. The teeth of the gear *l* extend only partially around the wheel *n*.

When the teeth are in connection, motion is imparted to the rolls *b c*, and the paper is fed.

The end of the paper passes over a plate, *o*, and its opposite edges under two lips or flanges *p p*, turned over at the opposite edges of the plate. These lips, and the parts of the plate beneath them, are gradually bent over, as seen at A, so that as the paper progresses between them, its edges are folded over.

After a length of paper to form a wrapper has been fed through the rolls, the teeth of the gear *l* pass by the gear *k*, and the rotation of the rolls ceases. The cutter *e* then descends and severs the wrapper or wrapper-blank, the cutter's movement being imparted as follows:

On the end of the driving-shaft, opposite the gear *l*, is a grooved pulley, *j*, banded to a pulley, *q*, on a cam-shaft, *r*. This shaft *r* carries at each end a cam-wheel, *s*, upon whose periphery one end of a lever, *t*, is pressed by a spring, *u*, the opposite ends of the two levers being jointed to the lower ends of two links *v*, whose upper ends are jointed to the opposite ends of the cutter-stock.

Just after the feed-rolls *b c* stop moving the paper, the cams lift the ends of the levers resting upon them, thereby drawing down the cutter and severing the paper, and as the points of the cams pass by the levers, the springs carry down the adjacent lever-ends and raise the cutter.

The strip of webbing *y* passes from the webbing-roll over the cutter, and down upon the paper, and over the edges of the lips *p*, passing, in its progress, under two friction or presser-rolls *w z*, which, pressing the cloth down to the paper, cause cloth and paper to move together.

The cloth passes under the folding-edges of the plate, as seen at A, the throat of the plate corresponding in width to the webbing, and the opposite edges of the paper being folded over the opposite edges of the webbing, as the webbing and paper are fed over and through the plate.

The webbing strip is fed or drawn along by two feed-rolls a^2 *h*, the lower one of which, *h*, is mounted on the shaft carrying the gear *i*, driven by the intermediate *k* and gear *l*, as before set forth.

The upper roll a^2 is a presser-roll, being pressed down by suitable springs, but its shaft carries a gear, b^2, driven by the gear *i*.

The webbing rolls *h* a^2 are intermittently driven by

the gearing, as are the paper rolls *b c*. They draw the strip of webbing along until the wrapping-end of the paper reaches them, and then they draw both paper and webbing as one.

In front of the feed-rolls *h a*^{2} is a vertically-reciprocating cutter, *c*^{2}, that severs the wrapped strip of webbing.

The opposite ends of the cutter-stock are connected by links *d*^{2} to the rear ends of rocker-levers *e*^{2}, whose opposite ends rest upon, and are actuated by cam-wheels *f*^{2} on the driving-shaft, the cams forcing such ends of the levers upward, and thereby depressing the cutter, and springs *g*^{2} carrying the ends of the levers down, when the cam-points have passed them, thereby raising the cutter.

The wrapping of the webbing leaves a strip of webbing extending beyond each end of the wrapper, as seen at D. (The webbing may be wrapped, however, the whole length of the strap.)

When the cutter descends to cut the webbing, a piece of webbing of the length required for the strap has passed by the cutting-plane, and rests upon a table, *h*^{2}, its outer end upon the front end of this table. While the webbing thus lies upon the table, and, preferably, before the strap is severed, cement is applied to the upper surface of the outer end of the webbing as follows:

A paste-brush is placed upon a rod, *i*^{2}, projecting from the end of a rocker-arm, *k*^{2}, turning on a pin, *l*^{2}, and connected by a link, *m*^{2}, with a crank-pin on a wheel, *n*^{2}, at the end of a shaft, *o*^{2}, carrying a gear, *p*^{2}, meshing into and driven by a gear, *q*^{2}, on the driving-shaft.

When the arm *k*^{2} is thrown out, the bristles of the paste-brush enter a cement-containing trough and take up the paste, and when the arm goes up, the ends of the bristles draw over the end of the webbing and apply cement thereto. Then the brush again moves outwardly, and the strap is ready to be folded and to have its ends cemented together, for which purpose, I employ mechanism as follows:

At about the centre of the table *h*^{2}, is a slit, *r*^{2}, of a length slightly greater than the width of the strap, and of a width sufficient to allow the folded strap to pass freely down through it, folded over a tongue, *r*^{3}. This tongue *r*^{3} is fixed to the bottom of a slide, *s*^{2}, that travels vertically between ways or guides, *t*^{2}.

The slide is forced up by a spring, *u*^{2}, and is moved down by an arm, *v*^{2}, fixed upon a shaft, *w*^{2}, which carries at its outer end an arm, *x*^{2}, jointed by a link to a rocker-arm, *y*^{2}, which is actuated by a cam, *z*^{2}, on the driving-shaft.

When the cam presses down the arm *y*^{2}, the slide *s*^{2} is pressed down by the arm *v*^{2}, and the tongue *r*^{3}, taking hold of the strap at or near its centre, presses the strap down through the slit, doubling it over the tongue.

The tongue carries the fold in the strap down through the slit between a roll, *a*^{3}, on the shaft *o*^{2}, and a roll, *b*^{3}, on the driving-shaft, which rolls bite upon the folded strap, and feed it between them, and when the two ends of the strap are brought together between the rolls, the cement-applied end is pressed against the other end, thus fastening the two together.

Thus finished, the straps are ready to be packed, and each is ready for application to a boot-leg.

By this method of preparing straps, it will be obvious that they can be rapidly and uniformly made, at a comparatively small cost of production, and without handling the webbing, as is necessary when the straps are made up by hand.

It will be obvious that the details of construction and arrangement of my mechanism for wrapping and otherwise preparing webbing straps may be modified without departing from my invention, the essential feature being in so combining and arranging mechanism, that webbing to form the straps, and paper to wrap them, are automatically cut into proper lengths, and the strap automatically covered by the paper, as well as in the combination, with such cutting and wrapping-mechanism, of the mechanism for applying the cement and folding the strap.

I claim—

The combination of mechanism for feeding the paper with mechanism for feeding the webbing and wrapping it with the paper, substantially as described.

Also, in combination with the feeding and wrapping-mechanism, the mechanism for cutting the paper and the mechanism for cutting the webbing, substantially as described.

Also, in combination with the mechanism for feeding, cutting, and wrapping the webbing, mechanism for folding the strap, substantially as described.

Also, in combination with the mechanism for feeding, cutting, and wrapping the webbing, mechanism for applying cement to the ends of the strap, substantially as described.

Also, the details of construction and arrangement of the feed-rolls *b c*, *a*^{2} *h*, and *a*^{3} *b*^{3}, the paper-folding plate *o*, the mechanism for working the paste-brush, and the folding-tongue *r*^{3} and mechanism for working it, substantially as described.

JOHN W. RICHARDSON.

Witnesses:

J. B. CROSBY,

C. WARREN BROWN.