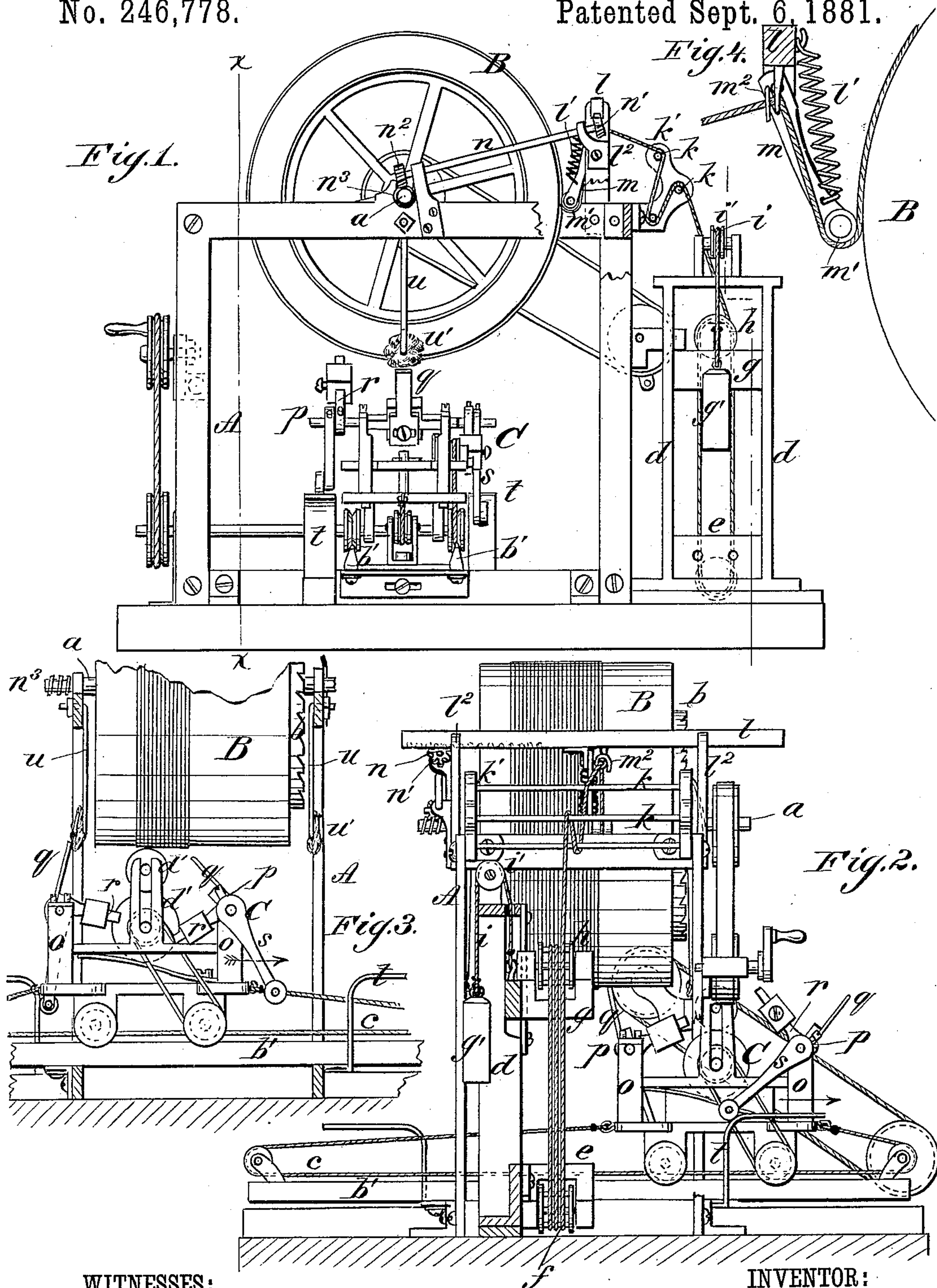


(No Model.)

T. H. HUGHES.
YARN PRINTING MACHINE.

No. 246,778.

Patented Sept. 6, 1881.



WITNESSES:

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TERRENCE H. HUGHES, OF NEW YORK, N. Y.

YARN-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 246,778, dated September 6, 1881.

Application filed June 15, 1881. (No model.)

To all whom it may concern:

Be it known that I, TERRENCE H. HUGHES, of the city, county, and State of New York, have invented an Improved Machine for Printing Yarn, of which the following is a specification.

My improvements relate to machines for printing or coloring the yarn used in weaving carpets.

As usually constructed, such machines consist of a drum, on which the yarn is wound, and a traversing carriage carrying the paint-box and rollers by which the color is applied. It is essential that the color be scraped into the yarn after application by the roller.

The object of my invention is to work in the color by pressure, and also to effect the winding of the yarn on the drum by automatic mechanism; to which ends the invention consists in certain novel features of construction, and in devices combined with the ordinary machine, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of the machine, partially sectional. Fig. 2 is an end elevation. Fig. 3 is a vertical transverse section on line *xx* of Fig. 1; and Fig. 4 is a detail section, showing the yarn-winding guide.

Similar letters of reference indicate corresponding parts.

A is the frame of the machine, carrying the winding-drum B on a shaft, *a*, to which power is to be applied when the yarn is to be wound, and which will be turned by hand during the printing. On the side of drum B is a ratchet, *b*, engaged by a pawl to prevent back movement.

C is the traversing carriage, fitted for movement beneath drum B on tracks *b' b'* by means of cords *c*, and carrying the printing-rollers *d' d'*. The carriage will carry the color-box, omitted from the drawings for the sake of clearness. All these parts, being in common use, do not need a more detailed description.

The yarn-winding devices, as shown in Figs. 1 and 2, are carried by standards *d d*, fixed at one end of frame A.

e is a bracket at the lower part of the standards, carrying a reel, *f*, and *g* is a slide fitted in grooves for vertical movement at the upper part of the standards and carrying a reel, *h*.

i is a cord from slide *g*, passing over a friction-roller, *i'*, and having a weight, *g'*, attached to it for drawing the slide upward.

The hank or skein of yarn is to be placed directly upon the reels *f h*, and will be kept taut by action of the weight. Heretofore it has been usual to first wind the yarn on a spool and then wind from the spool to the drum. With the above-described devices the yarn is wound on the drum from the skein, and the intermediate winding thus saved.

At the end of frame A, above the standards *d*, tension-bars *k k* are fixed in side brackets, *k'*. Above these tension-bars and nearer to the drum is a cross-bar, *l*, to which is pivoted an arm, *m*, that carries at its outer end a roller, *m'*. (Shown most clearly in Fig. 4.) A spring, *l'*, from bar *l* to the arm, tends to draw the roller into contact with the drum. The yarn is passed from bars *k* to a guide, *m²*, and thence downward beneath roller *m'* to the drum. Sufficient tension is thus given to wind the yarn without stretching it.

To insure winding of the strands side by side, movement is given to bar *l* by the devices next described. The bar *l* is formed as a rack on its under side, and is loose in its sustaining-brackets *l²*. At one side of the drum a shaft, *n*, sustained in suitable bearings, extends from the drum-shaft *a* to the rack-bar, and carries at its ends pinions *n' n²*, that engage, respectively, with the rack *l* and with a worm, *n³*, on shaft *a*. By these connections the bar *l* is moved endwise as the drum revolves, with the result to carry the yarn slowly across the face of the drum and prevent lapping of the strands.

The improvements in the printing portion of the machine are applied, in connection with the traversing carriage C, as follows: On posts *o o*, at each end of the carriage, is fitted a cross-shaft, *p*, from which a scraper-blade, *q*, of metal, projects upwardly. On the end of the shaft is an arm, *r*, weighted to throw the blade *q* toward the drum. There is also a second arm, *s*, on the shaft, extending at about right angles to arm *r* and fitted with a friction-roller at its outer end. At the side of the track and near its end is fixed a tripper, *t*, consisting of a strip of metal bent to extend in the path of the arm *s*, so as to raise the same and turn the scraper *q* outward after it leaves the drum.

From the frame A a rod or wire, *u*, extends

downward, and carries at its lower end a wiper, *u'*, of sponge or other suitable material, so placed as to come in contact with the end of scraper *q*. These arrangements are similar
 5 at each end of the carriage and at both ends of the track, for the reason that the printing-rollers lay on the color at each reciprocation, while the scrapers act alternately.

The operation is as follows: The yarn is first
 10 wound upon the drum in a single layer, after which the printing is done by moving the carriage back and forth, and turning the drum from time to time, to bring the unprinted portions into position above roller *d*. The usual
 15 practice is to place a box of one color on the carriage, and the operator, using the pattern for a guide, turns the drum as required until all the stripes of that color are put on. A second color is then put on in the same manner,
 20 and so on. With my scraping devices the scraper behind the roller performs the work, the other scraper being meanwhile retained out of contact by the weighted arm *r*. As the carriage moves forward the arm *s* leaves the
 25 tripper *t*, the scraper is free to assume an upright position, and its end, taking against the sponge *u'*, is wiped. Leaving the sponge, the end takes against the drum and is turned slightly back until it clears the drum and is
 30 carried and pressed against the yarn by the weight, thus scraping the color into the yarn. The scraper falls fully forward as soon as it clears the drum, and remains so while the carriage returns, when it is thrown back by its

tripper. On such return movement the other 35 scraper acts as described.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with drum B and the 40 vertically-grooved standards *d*, of reel *e*, slide *g*, reel *h*, cord *i*, and balance-weight *g'*, substantially as and for the purposes set forth.

2. The rack-bar *l*, spring-actuated arm *m*, carrying roller *m'*, and tension-bars *k*, sub- 45 stantially as shown and described, in combination with the winding-drum B, for operation as set forth.

3. The combination of the shaft *n* and connections *n'* *n*² *n*³ with the drum-shaft *a*, rack-bar 50 *l*, and guide-arm *m*, substantially as shown and described.

4. The rock-shafts *p*, scraping-tongues *q*, and weighted arms *r*, in combination with the traversing carriage C and yarn-drum B, substan- 55 tially as shown and described, for operation as set forth.

5. The trippers *t*, arm *s*, shaft *p*, weighted arm *r*, and scrapers *q*, substantially as shown and described, in combination with the car- 60 riage C and drum B, for operation as specified.

6. The fixed rods *u* and wipers *u'*, in combination with drum B, carriage C, and scrapers *q*, substantially as shown and described.

TERRENCE HENRY HUGHES.

Witnesses:

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 C. SEDGWICK.