(No Model.)

G. P. WHITMAN.

EXPANDING COMPRESSION ROLL FOR SLASHERS, &c.

No. 342,889. Patented June 1, 1886.

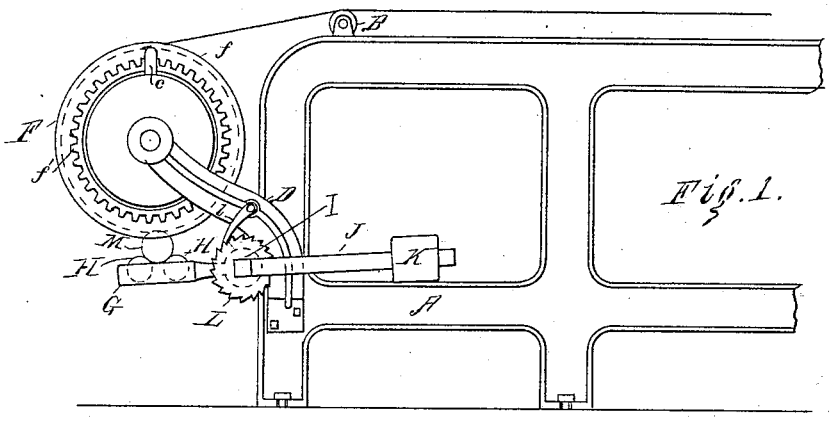

Fig. 1.

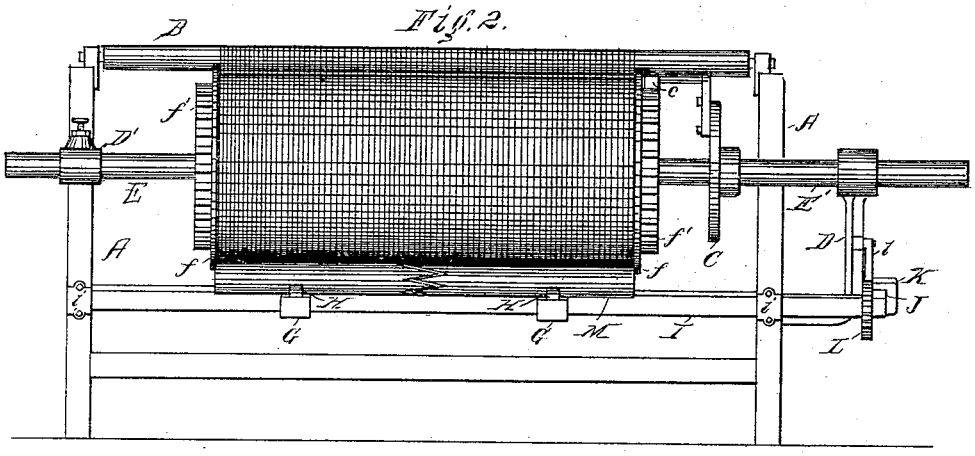

Fig. 2.

Fig. 3.

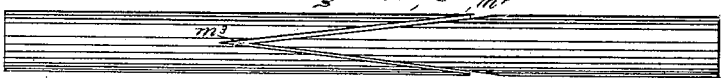

Fig. 4.

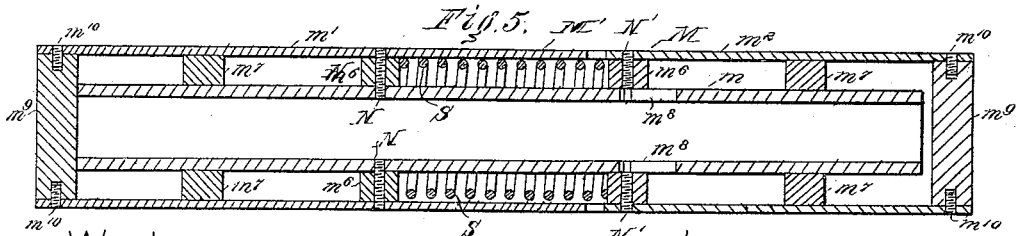

Fig. 5.

Witnesses—
Kirkley Fyde,
Herbert R. White

Inventor—
Gilbert P. Whitman,
By Albert M. Moore,
His Attorney.

UNITED STATES PATENT OFFICE.

GILBERT P. WHITMAN, OF MANCHESTER, NEW HAMPSHIRE.

EXPANDING COMPRESSION-ROLL FOR SLASHERS, &c.

SPECIFICATION forming part of Letters Patent No. 342,889, dated June 1, 1886.

Application filed October 2, 1884. Serial No. 144,536. (No model.)

To all whom it may concern:

Be it known that I, GILBERT P. WHITMAN, a citizen of the United States, residing at Manchester, in the county of Hillsborough and State of New Hampshire, have invented a certain new and useful Improvement in Expanding Compression-Rolls for Slashers, Dressers, Warpers, and other Machines, of which the following is a specification.

My invention relates to an expanding-roll to be used to create a pressure on warps or yarns being wound on a beam provided with heads.

In the accompanying drawings, Figure 1 is a side elevation of a part of the head end of a slasher with a warp-carrier roll, beam and its gear, presser-roll, lever, weight, and friction-rolls, ratchet and pawl; Fig. 2, an end elevation of the same; Figs. 3 and 4, plans of my improved expanding-roll, the roll being expanded in Fig. 4, but not in Fig. 3; Fig. 5, a central longitudinal section of said roll to show the construction of the same.

In slashers, sizing-machines, warpers, and similar machines which wind yarns upon a beam between heads it is customary to apply pressure to the surface of the yarn between the heads of the beam by means of a roller, which is placed between said heads, generally below the beam, and which is pressed upward toward or against the barrel of said beam, or upon which the barrel is pressed by the weight of the beam. The former method is commonly used in slashers and the latter in warpers. The object of the presser roll is to wind the yarns smoothly and compactly upon the beam.

The frame A of the head of a slasher, the carrier-roll B, supported upon said frame, the bracket D, bolted to said frame, and the bracket D′, also bolted to said frame, forming the supports of hollow shafts E E′, which serve as journal-boxes for the loom-beam F, said beam F having heads *f f*, provided with gears *f′ f′*, the face-plate C, secured on the hollow shaft E′ and having a dog, *c*, which engages the teeth of one of the gears *f′ f′* and causes the beam to revolve with said shaft E′, said shaft being driven by the usual mechanism, (not shown herein, but substantially as shown in the United States Patent No. 294,235, dated February 26, 1884,) the shaft I, turning in half journal-boxes *i i*, secured to the frame A, and provided with forwardly-projecting arms G G (each supporting a pair of anti-friction rolls, H H) and with a backwardly-projecting arm, J, on which the weight K is adjusted to lift the anti-friction rolls, the ratchet L, secured to said shaft, and the pawl *l*, pivoted to said bracket D to prevent the weight from suddenly throwing up the anti-friction rolls and displacing the presser-roll when the loom-beam is removed from the slasher, are all of the usual construction and operation.

My presser-roll M is supported on the anti-friction rolls between the heads of the beam parallel with the barrel of said beam, and is revolved by frictional contact with the yarn wound on said beam in the usual manner; but the construction of my roll differs from that of the ordinary presser-roll, the latter being of unvarying length.

Ordinarily the distance between the heads *f f* of a loom-beam slightly varies, being greater by from a sixteenth to a quarter of an inch near the circumference of the heads than near the barrel, and there are also variations in the heads arising from the warping of the heads (usually of cast-iron) when cooling after casting, and the distance between the heads of one beam and the distance between the heads of another beam intended to be of the same length will often differ by a considerable amount, so that any presser-roll of invariable length will be too short for some beams or too long for others, and too long when the beam has just begun to fill or too short when the beam is nearly full.

When the yarn, while being wound under pressure upon the beam, is not uniformly pressed from head to head of the beam, owing to the shortness of the presser-roll, the parts of the wound yarn or warp not so pressed—that is, the parts between the heads of the beam and the ends of roll—will be slack wound, increasing the diameter of the wound warp at these points, and thereby drawing the yarn faster at the sides of the sheet of yarns coming from the slasher and rendering said yarn more liable to be broken. When the same beam, so imperfectly wound, is put into a loom, the loosely-wound yarns near the end of the beam will unwind the

faster, because wound on a larger circle, and this will make slack selvages in the cloth woven by the loom.

The roll M has a central core, *m*, (preferably a metallic tube or hollow cylinder,) reaching nearly from end to end of the same. Around this core *m* is placed an outer tube or shell, M′, divided into two parts, *m′ m²*, of nearly equal length, united by a water-melon joint at *m³*—that is, the adjacent ends of the parts *m′ m²* are each provided with long V-shaped projections or points *m⁴*, the points on one part, *m′*, entering the correspondingly-shaped notches *m⁵* between the points on the other part, *m²*. The parts *m′ m²* are each provided with two annular bushings, *m⁶ m⁷*, which fit said core closely enough to keep the parts *m′ m²* of the shell M′ concentric with said core and in line with each other, and at the same time to allow the parts *m′ m²* to slide on said core. One of the parts, *m′*, is secured to the core by pins or screws N N, which pass through the outer shell, M′, into said core. The other part, *m²*, is provided with similar screws, N′ N′, the points of which are not threaded, but enter longitudinal slots *m⁸ m⁸* in the core, these slots being wide enough merely to allow the points of the screws N′ N′ to move in said slots. Thus the part *m′* is rigidly secured to the core and the part *m²* has a longitudinal motion only on said core. The screws N N′ are preferably driven through the bushings nearest the middle of the roll, in order that said screws may be protected by the bushings from being bent. A spiral wire spring, S, surrounds the core within the shell M′, and is compressed between the bushings nearest the middle of the roll, and crowds the parts *m′ m²* away from each other, opening the joint *m³* and lengthening the roll. The amount of possible expansion of the roll will depend on the length of the slots and the variation in length of the roll will not ordinarily need to exceed a quarter of an inch. It will be well to close the ends of the shell M′ by plugs *m⁹ m⁹*, inserted therein and held in place by screws or pins *m¹⁰ m¹⁰*, driven radially through said shell into said plugs. It is evident that owing to the shape of the joint *m³* the yarns running over the roll at right angles to its axes cannot enter the surface of said roll to any appreciable extent on any side thereof, as the angle which such yarns make where they touch the roll, with the dividing space between the parts *m′ m²* of the shell M′, is almost a right angle, and the space between any projection *m⁴* and its corresponding notch, *m⁵*, when the roll is expanded is equal on both sides of the projection, and therefore only half as great as if the parts *m′ m²* were in contact after the expansion of the roll.

The roll M is compressed when placed between the heads and allowed to expand against the inner faces of the heads. This roll, if made large enough, may be substituted for the cylinder of an ordinary warping-machine by allowing both parts *m′ m²* to slide on the core—that is, by making the screws N N like the screws N′ N′—and causing their inner ends to enter slots like the slots *m⁸ m⁸*, and by making the core longer than the shell M′, and supporting and revolving it as the shaft of such a cylinder is usually supported and revolved.

I claim as my invention—

1. The combination of a central core provided with longitudinal slots, an outer shell formed in two parts provided at their adjacent ends each with a series of V-shaped projections alternating with V-shaped notches, the notches and projections of one part adapted to receive and enter the projections and notches, respectively, of the other part, one of said parts of said shell being rigidly secured to said core and the other of said parts having pins or screws driven radially through its walls into said slots in said core, and means, substantially as described, of causing one of said parts to move longitudinally on said core without turning thereon, as and for the purpose specified.

2. The combination of a central core provided with longitudinal slots, an outer shell formed in two parts provided at their adjacent ends each with a series of V shaped projections alternating with V shaped notches, the notches and projections of one part adapted to receive and enter projections and notches, respectively, of the other part, one or both of said parts being free to move longitudinally on said core, but prevented from turning on said core by screws or pins driven radially through the walls of said shell into said longitudinal slots, and a spiral spring surrounding said core within said shell at the junction of its parts and compressed between bushings with which said parts are provided, as and for the purpose specified.

GILBERT P. WHITMAN.

Witnesses:

SEBASTIAN CHRISTOPHE,

HENRY W. FISHER.