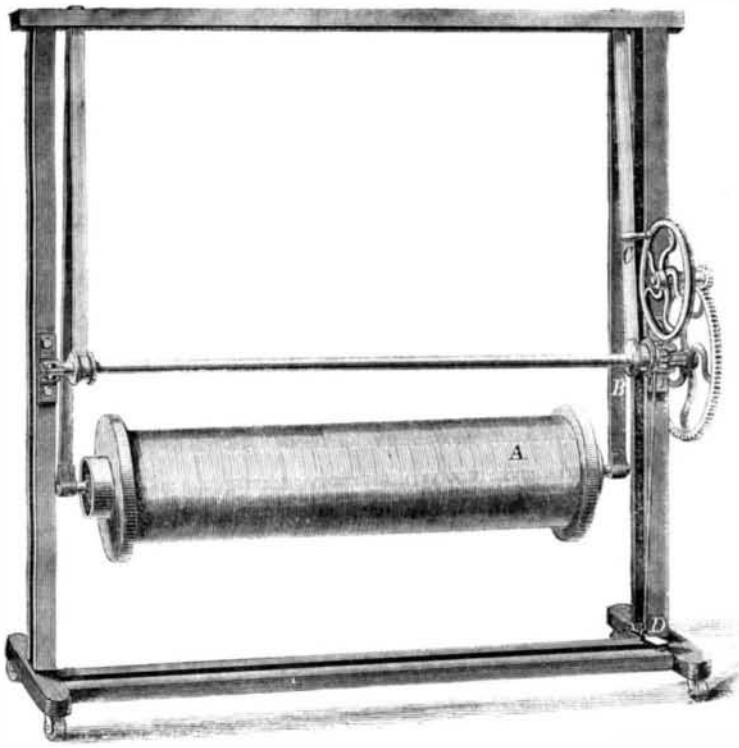
Warp Beam Elevator and Transporter.

The value of this machine can readily be seen by the practical manufacturer. In the dressing department, heretofore, the necessary qualification in the helper has been strength instead of intelligence, and at times the overseer has been seriously troubled to obtain men who were strong enough to handle the beams, particularly on heavy work; very few men could be found who would not break down under this severe, constant labor. With this machine this difficulty is entirely obviated, while the labor of at least one man is dispensed with. Any person of ordinary intelligence can operate it. Being mounted on casters it can easily be moved in any direction and

Fig. 1



SAUNDERS'S WARP BEAM ELEVATOR AND TRANSPORTER.

quickly adjusted, relatively, to the warper, dresser or drawing-in frame, for the purpose of receiving or depositing the beam. The warper, dresser or drawing-in hands can easily change their own beams, without loss of time in waiting; oftentimes this will prove a great convenience aside from the absolute saving of time.

The operation is simple; the journals of the beam are inserted in the loops of the straps, and the power is applied to the handle on the balance-wheel; a ratchet gear on the main shaft, with a pawl attached to the frame prevents the beam from running down while being raised; this pawl is connected by a wire to a treadle, D, by means of which, the pawl can be held out of gear, while the beam is being lowered into its required position. This machine is in successful use in some of the best mills in the country. It was patented on the 16th of August, 1864. For further information address the manufacturer, A. H. Saunders, Nashua, N. H.

CAMP NELSON WATER WORKS.

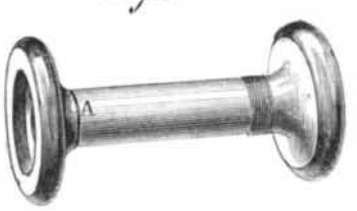
A correspondent sends us a description of the water works constructed for the supply of Camp Nelson, Ky., under the direction of Capt. T. E. Hall, formerly of General Burnside's staff. The only thing that we discover in it worthy of note is the hight to which the water is forced at a single lift, this being 478 feet, measured vertically. As the water in the river rises and falls at its various stages 60 feet, the engine was placed on trestle work 75 feet above the river at its lowest stage. A simple lift and plunge pump is employed, with a pump rod of 3-inch iron 75 feet in length. The pipe through which the water is forced up into the reservoir is of cast iron 8 inches in diameter, and 60,000 gallons are raised every twenty-four hours, supplying a camp of 10,000 men and 12,000 animals. The water is distributed throughout the camp of 4,000 acres in service pipes, and the whole cost of the work was $35,000. The works are very creditable to Capt. Hall's engineering skill.

SAUNDERS'S IMPROVED BOBBIN.

The object of this improvement is to avoid the waste which usually results from the manner of attaching the yarn to the ordinary bobbin during the process of doffing, or applying it to the spinning frame. With the ordinary bobbin the yarn is wound a few times around the barrel until there is sufficient friction to hold it securely when the full one is broken off, invariably leaving the end of the yarn flying; this flying end will get crossed and entangled in the first layer of yarn, and in unwinding, on the spooler or warper, or in the shuttle, the yarn will break, leaving more or less on the bobbin, constituting waste, which, at the present or even at the old prices of cotton, forms no inconsiderable item in the cost of manufacturing; very much of this waste is not apparent as yarn-waste, as the short pieces are unwound and thrown upon the floor, and appear in the waste account as sweepings.

Fig. 1

Fig. 2

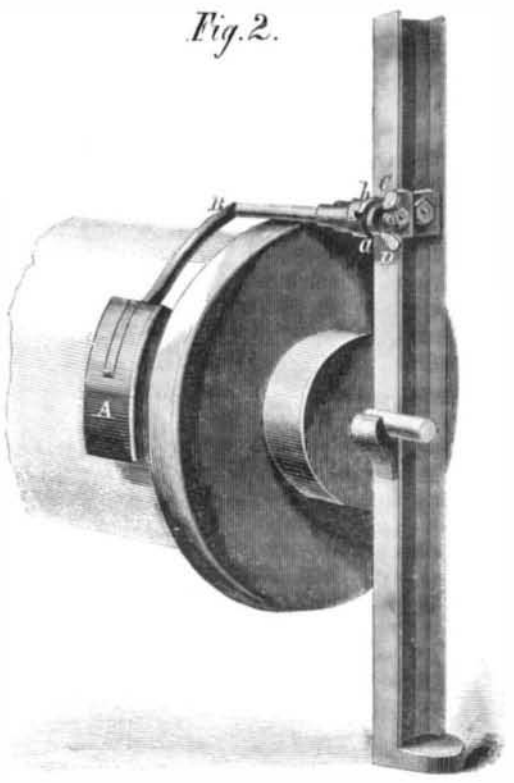


This improved bobbin has an angular or V-shaped groove, A, cut into and extending entirely around, the barrel, at the foot of the taper of the head; the doffer has only to wind the yarn once, or at most twice, around the barrel of the bobbin, in this groove (the taper of the head serves as a guide to the yarn, without any particular care on the part of the doffer), break off the full bobbin close up to the groove, a habit easily and naturally acquired, and the end of the yarn is secure; the drag of the bobbin only serves to hold it more securely. The inventor guarantees that not a particle of waste will be made by leaving yarn upon this bobbin; it takes less time to doff; every end is securely fastened by the first attempt, so that the frame starts up at once, without any subsequent stopping to secure the loose and flying ends. This hitching groove can readily be made in any ordinary warp or filling bobbin; in fact, the inventor prefers to apply his groove to them, as the wood is harder and smoother after they have been used. Patented August 25, 1863. For further information address B. Saunders, Nashua, N. H.

SAUNDERS'S FRICTION WEIGHT FOR BEAMS.

This invention has been made with the view to obtain a friction on the beam that will give a uniform tension on the yarn, and thereby prevent breakages in the loom. To obtain this the inventor uses a weight, A, which rests upon the yarn on the section beam, near its head; this weight is held by an arm, B, to which it is attached in such a manner that it

Fig. 2.



will conform to the surface of the yarn; this arm passes through a stand, C, which is bolted to the dresser frame, fitting so that it will readily turn in the bearing; on the end of this arm a thread is cut to fit a thumb-screw, D; this latter has a groove, *a*, turned in its circumference, in which a pawl, *b*, is fitted to retain it in its position; this pawl is attached at its other end, to the stand, and so that it can be raised up and out of the grooved nut, to allow the arm to slip through when the beam is to be changed. It will readily be seen that when the beam is full, the weight will be at nearly a right angle with the stand, giving a friction equal to its full weight, but as the yarn is unwound, and the beam grows smaller, the weight conforming to the surface will drop and be supported by the arm in the stand more and more, in exact proportion to the decrease of the diameter, and of course the friction will decrease in the same proportion. Ordinarily, with good warping, this friction will be sufficient, but if the number of the yarn is not uniformly the same, and care is not taken to weight the beam properly on the warper, it will become necessary to have more friction than the weight affords; this can be obtained by turning the wing-nut, which will bring the side of the weight to bear against the inside of the beam head, and the friction can be increased as much as may be required. The bearing surfaces of the weight are covered with leather, to avoid injury to the yarn and beam head. Actual use, says the inventor, has proved that this friction weight will save more than one half of the usual number of breakages in weaving. All things being equal, the inventor guarantees fifty per cent less breakages of the yarn in the loom with this weight on the dresser than with any other now in common use. It was patented Nov. 15, 1864. For further information address B. Saunders, Nashua, N. H.

THE breech-loading rifle Commission at the Springfield armory are very busy completing their work, and will, no doubt, strongly urge the adoption of the breech-loading rifle.