# Machinery and Appliances.

## *ROLLER, SIDE, AND SEGMENT TEMPLES.*

MESSRS. LUPTON BROS., TEMPLE MAKERS, GRANGE IRONWORKS, AND SCAITCLIFFE FOUNDRY, ACCRINGTON.

We have once more to call the attention of our readers to the subject of loom temples. Considering the vast number and variety of textile fabrics, light, heavy, open, close, thin, thick, elastic, inelastic, and possessing almost every other quality it is possible to name, this fact will render it obvious, without the need of argument, that "templing"—otherwise keeping the fabric extended to the width of the warp in the reed during the process of weaving—is not the easy matter that the careless observer might at the first glance assume it to be. Neither, indeed, will it be found as simple a problem as even an expert whose experience has been confined to one branch of the textile industries might possibly affirm. Woollen, worsted, cotton, linen, and silk each require careful investigation and special treatment. Still, templing is templing, and necessarily there is a family likeness in the appliances by which it is accomplished in the different industries. This enables us to generalise somewhat, and experience confirms the conclusions of reason on the matter.

It will be obvious that the largest quantity of this factor experience will be found amongst those whose duty it is to cater for every variety of want of this kind, and that therefore a temple maker will naturally be a treasure to an inquiring investigator in this field. This we found to be the case in the course of a visit to the firm of Messrs. Lupton Bros., Grange Ironworks, Accrington. In the course of the discussion of the principle of templing and the requirements of manufacturers in connection therewith, the difficult and oft-repeated question arose as to whether it is possible to get a temple that answers very well and equally well for strong and light goods, and if so, which is that temple? Messrs. Lupton Bros., whilst answering the question in the negative, as we should also do, affirmed that, though this was the case, they could, from an extended experience, safely declare that the requirements of all the textile industries could be met by the adoption of about three leading types, slightly modified in their fixings and mountings to suit the peculiarities of the various looms. These three types were affirmed to be: 1st, the trough and roller temple; 2nd, the side roller temple; and 3rd, the expanding or segment temple. Temples on these various principles would answer for every fabric, from the coarsest jute canvas to the finest linen: from the heaviest woollen to the lightest cashmere; and through every grade of cotton to the finest silks. Messrs. Lupton Bros. were able to enforce their arguments by appeals to practical illustrations in the shape of temples devised on the lines referred to for nearly all the purposes mentioned. Their temple museum is one of great interest to the technical student, affording an illustration of the development of the art from the crude means employed in the days of the hand-loom weaver to those of the present times. Equally if not more interesting is a walk through their extensive works, which afford admirable means to the novice of learning how a temple is made, from the raw material to the finished article ready for attachment to the loom. In these matters, however, we are not at present deeply interested, it being more to our purpose to note the improvements in construction and finish made by Messrs. Lupton Bros. in the various temples which, as we have indicated, are typically adequate to meet every requirement in templing of every textile manufacturer.

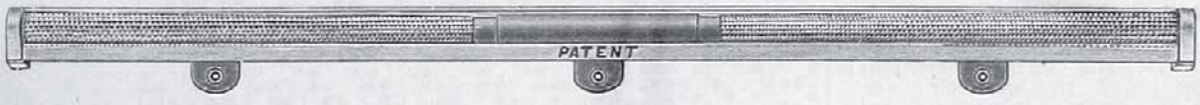


FIG. 1.—TROUGH AND ROLLER TEMPLE.

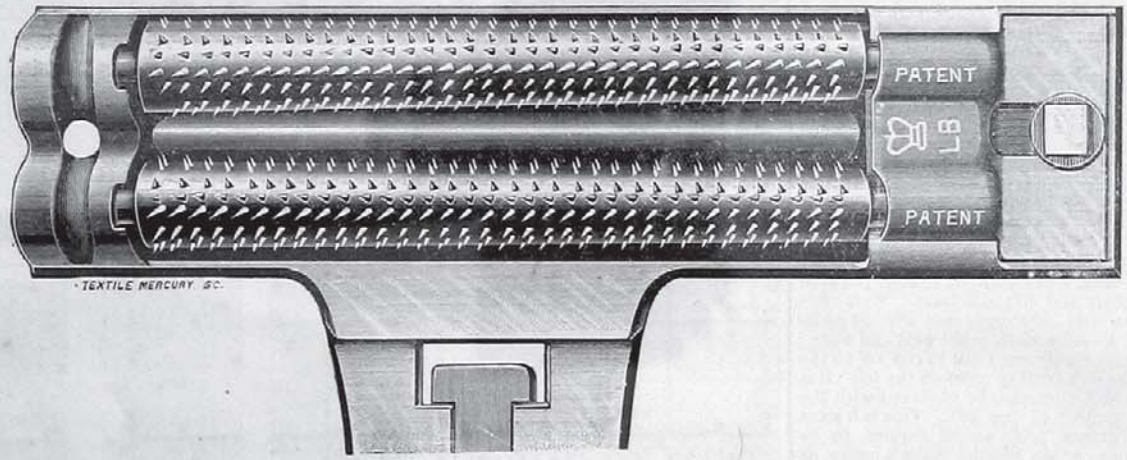


FIG. 2.—DOUBLE ROLLER SIDE TEMPLE. (FULL SIZE.)

### I.—THE TROUGH AND ROLLER TEMPLE.

As probably the oldest of the existing types of temples, and certainly the oldest of the three referred to previously, it will be in accordance with the fitness of things that we devote our attention first to the trough and roller temple. The principle of a roller revolving in a dish was first introduced by the late James Bullough, the eminent inventor, of Blackburn, and afterwards of Accrington, who was the father of Mr. John Bullough, head of the firm of Messrs. Howard and Bullough, the well-known machinists, of Accrington, to whose mammoth works those of Messrs. Lupton Bros. are closely adjacent. As first constructed, it consisted of a trough and roller in a crude form, the ends of the roller to the extent of about 12in. bein covered with a layer of india-rubber cemented upon them. These layers, however, were difficult to keep in their place, and the plan was superseded by one substituting a coating of emery attached by means of glue, the idea in all probability being borrowed from the method of covering the taking-up beam of the loom, long known as the emery roller. This did very well for a time, but the emery rubbed off, or the glue fractured and came off in flakes. The next change was an approach to the present method. It was to punch up small spikes or pins upon the end surfaces of the roller, which had previously been covered with rubber. These spikes being struck up by hand with hammer and chisel were too rough and crude, and, penetrating into the cloth, broke the threads of which it was composed. This was remedied by making them on an entirely different system, namely, by chasing them at an angle of about 45 degrees to a fine edge, and then to flute or grooving them longitudinally to a point, thus producing a fine saw tooth.

Though thus improved in the cut of the roller these temples were found to be still inadequate for good templing on all sorts of work, their defects being especially manifest when at work upon strong cloth. A considerable demand therefore arose from the trade for something better. This induced Messrs. Lupton Bros. to carefully examine it, in order that if possible they might so improve it that it would answer all the requirements that were likely to be made upon it. They found they were enabled to do this in many points, the result being that it is now one of the best temples in the possession of the trade. The pivots of the roller formerly worked in drilled brass ends, for which they have substituted brass caps, the pivots now resting upon the ends of the cast-iron trough, in a position which enables it to just clear the trough. The cap has a cavity cast in its under surface which is lined with leather, this being found to wear much better and longer than the brass itself. The caps are fastened down by a bolt and nut. Though seemingly a small improvement, the expert and practical man will see that it is an important one, as it permits of the adjustment

of any wear that may occur much better than the old form of the brass end. Of how soon the latter wore away and the consequent trouble with the selvages that arose to the weaver, the elderly generation of workers in a weaving shed will no doubt have a lively recollection. Messrs. Lupton Bros. have protected this invention. Another change which has been introduced by the makers and has been found to be an improvement, is to construct the rollers with a slight cone from each end towards the middle. This is very little, say not more than $\frac{1}{16}$". The rollers are case-hardened, fluted, and cross-cut in the usual manner, and the ends or bearings are made very short, enabling a 42" cloth to be woven in a 44" loom, which will many a time prove an advantage to the manufacturer, enabling him to accept orders that he must otherwise allow to go past him. The construction of the trough has also been very much improved by casting upon its back edge an over-lapping strip, which forces the cloth to keep contact with the periphery of the roller for a proportionately longer time, thus giving the roller a much better grip upon it and thereby materially assisting to prevent contraction, and preventing also the backward and forward movement of the cloth. Another advantage accruing from this is that the flute points of the rollers do not wear away nearly so soon as before. By these various patented improvements the cloth when laid upon the counter shews a clear gain of about $\frac{1}{4}$in. in width. Our illustration, Fig. 1, shews the present appearance of this temple.

II.—THE ONE-ROLLER SIDE TEMPLE.

This is a type of temple that for certain classes of work, chiefly in the manufacture of the lighter varieties of fabrics, has been popular for years, and continues so to the present day. Messrs. Lupton Bros. have also introduced various improvements in its construction. It is usually made of boxwood with inserted steel teeth. The boxwood roller, as constructed by them, is conical, and has a steel shaft passing through its length, which it will be obvious will greatly strengthen it and prolong its life. It is also furnished with a steel collar against which the roller works. The pivot, too, is blocked. The guage of the pins is also graduated, they being planted most closely at the thick or outer end of the conical roller. The details of the whole temple and its setting have been so modified that the temple itself in position passes under the weft fork hammer, thus enabling the manufacturer to utilise the full width of the loom, a point that will no doubt be duly appreciated.

III.—THE DOUBLE ROLLER SIDE TEMPLE.

This is a very widely popular temple for what may be termed the medium weight of cloth, many thousands being in use in the various textile industries. As constructed by Messrs. Lupton Bros., with their numerous improvements in details, it constitutes one of the most useful temples existing. Besides making the caps or covers of cast iron or brass, they are also made of charcoal sheet iron or steel. An improvement is also effected in the construction of the trough or box carrying the rollers by casting it with blocks for the pivot ends of the rollers, so that they bear both upon their collars and their pivot ends. They are secured in their position by means of a patented adjustable pivot cap, which, whilst accomplishing this very desirable object, admits of the roller being removed with ease and facility for any requirement. This conduces greatly to their durability. Besides in the ordinary form the makers also construct this temple with the steel angle bar on the top of the cloth, which is specially required in many cases for loose reed looms. The back roller of the temple is arranged with more or less of an angle to the front one, as will be seen from our illustration, Fig. 2. Fig. 3 shews the cover. This form of temple is also made with three rollers for special requirements, the third being carried in the cap. There is further another form, in which the box and rollers are arranged conically, to meet special needs in the manufacture of very strong fabrics. In all its various forms this temple is a highly valuable one to manufacturers in consequence of its efficiency and wide adaptability.

IV.—THE RING OR SWISS TEMPLE.

The ring, or Swiss temple, by which name it was once best known, is, we believe, of Swiss origin, having been invented specially for use in the manufacture of the strong cotton cambrics and muslins for which the little republic once had a reputation. For such articles it is a very useful temple, its rows of fine inserted pins easily penetrating without damaging the close fabrics just mentioned. It is likewise the best known temple for strong or heavily picked cloth, as it does not, like those hitherto described, roll with the cloth as it receives it; but each tooth on the periphery of the rings carries out the cloth any desired width up to a quarter inch wider than the point at which it receives it. It thus effects an enormous saving in the reeds and side ends, preventing the latter from chafing and breaking down against the reed, and the dents of the reed from being broken by the strain. It is also known as the segment temple. Messrs. Lupton Bros. also make this temple on a very extensive scale. In its details they have also effected some very important improvements, which they have patented, eradicating some annoying defects, namely, the liability of loose threads slipping down through the segments and rings, and so interfering with the easy revolution of the rings in their positions. This sometimes led to the fabric being torn, which

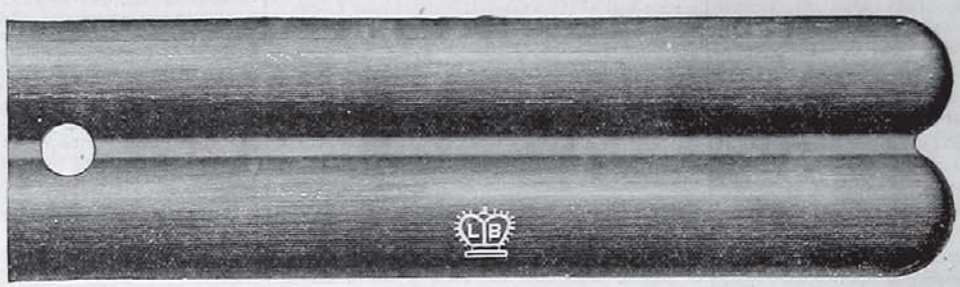


FIG 3.—COVER FOR DOUBLE ROLLER SIDE TEMPLE.

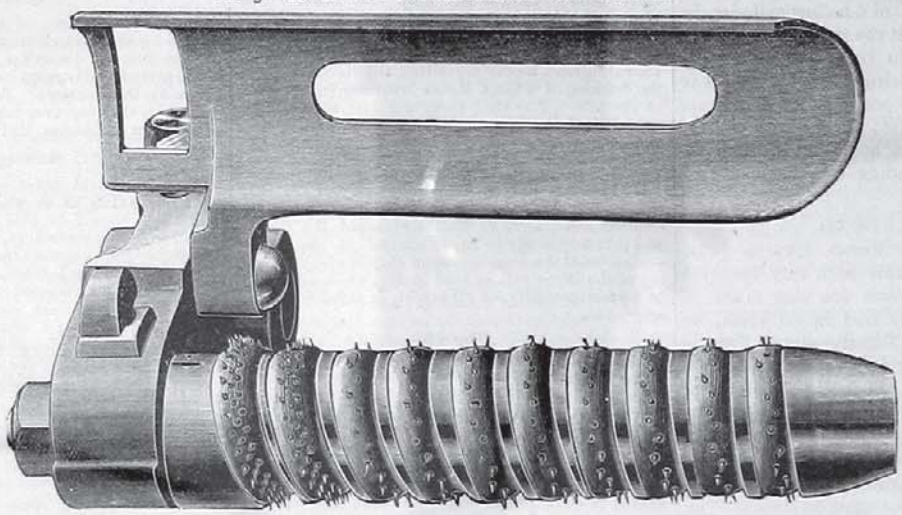

FIG 4.—RING OR SEGMENT TEMPLE. (FULL SIZE.)