

Machinery and Appliances.

LOOM TEMPLES AND TEMPLING.

MESSRS. JAMES BLEZARD AND SONS,
GUY FOUNDRY, PADIHAM.

There are temples and temples, but the temples of which we are about to write are the appliances known by that name, which are designed for the purpose of keeping a woven fabric extended to its full width while in the process of being woven in the loom. The full width in this case means that width at which the warp stands in the reed. The earliest fabrics were woven without any templing, because they did not need it, being made simply of flags or reeds from the swamps or

curves in a lateral direction. A well-constructed cloth consists of warp and weft of equal grist, and put together with as nearly equal tension upon the threads as possible. The threads of a cloth so formed bed well into each other, and it wears much better than when the tension upon one thread is much greater than upon the other. For obvious reasons those that get the most tension are the warp threads; the weft has scarcely any, and what little there is ceases when it has left the shuttle. Thus unaided, the weft offers scarcely any resistance to the force of the warp threads as they tend to draw it from a straight line into a wave-like one all across the width of the cloth. But this cannot be done without contraction occurring in the width. The manufacturer usually and necessarily provides for this by adding a sufficient number of threads to form one, two, or three inches extra width of

loom weaving, a couple of sticks were tied together, having pins fixed upon their outward extremities, which were inserted into the cloth selvages, and so extended as to keep the cloth from contracting to the full extent that otherwise would have occurred. As the weaving proceeded they were naturally woven down so far as to exercise no influence, when they were replaced near the fell of the cloth and the weaving renewed. This called for a good deal of attention from the weaver. The same method was in use for power-loom from the period of their introduction until well into the decade 1840-50. James Bullough, of Blackburn, and afterwards of Accrington, amongst his other conspicuous successes in the field of invention, invented the well-known roller temple, about 1842. This in a few years superseded the old handloom temple, and several other inventions, not very successful, that had been intended to set it aside.

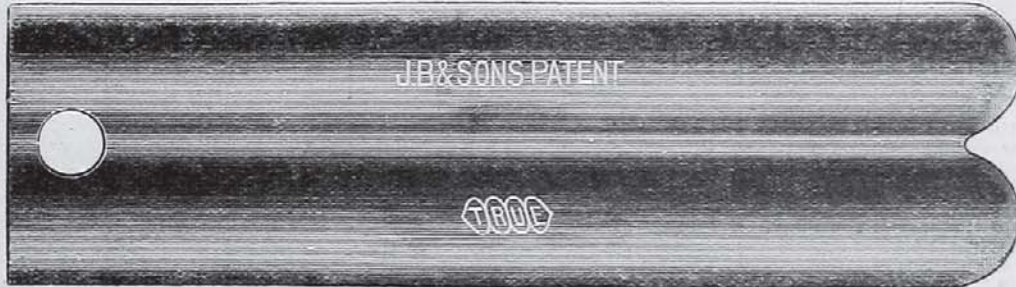


FIG. 2.—THE PATENT TEMPLE, FULL SIZE, ILLUSTRATING PRINCIPLE OF ADJUSTABLE ROLLER BEARINGS.

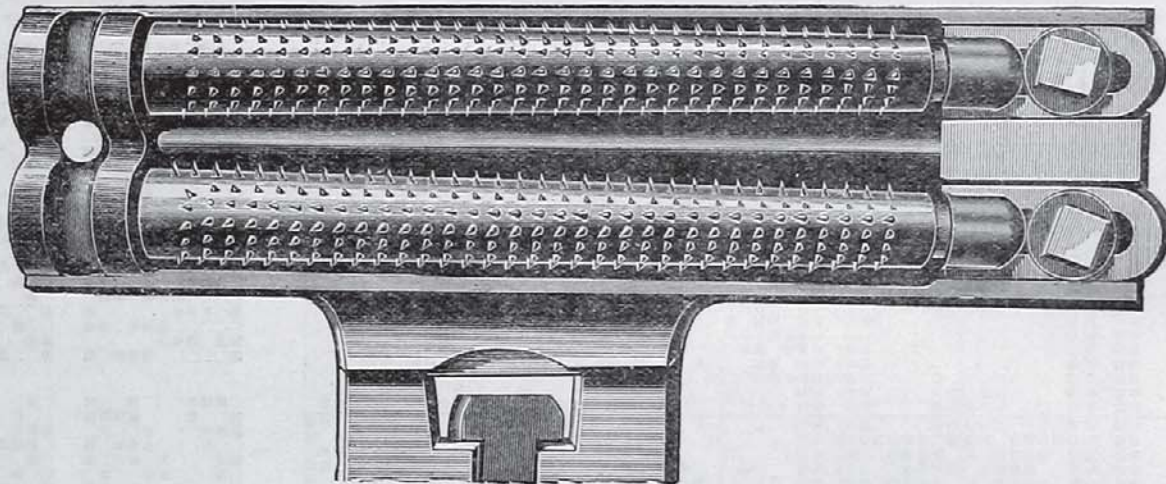


FIG. 3.—STEEL CAP, WHICH CANNOT BE BENT.

shallows of rivers, these forming both warp and weft. The pieces woven from these materials were no larger in length or width than the length of the leaves of these weeds. The weaver's difficulty and the necessity for templing commenced when he began to make and use continuous threads of warp and weft, and apply tension to those composing the former. This tension causes a contraction in both the width and length of the fabric, but mostly in the former, because usually it is greatest upon the warp. Both warp and weft threads are put together in straight lines, but when they come to be bedded closely to each other, passing under and over one another, they necessarily both assume a wave-like form if the tension upon each sort is about equal. If it differs, those which have the most tension upon them will maintain the straight line, whilst the waves in the other will become larger. These waves in both classes of threads, are, of course, vertical; that is, the changes from the straight line consist of elevations and depressions, not of

warp, and thus obtains the width of fabric he desires. But a cloth so made is always uneven, having more warp threads per inch, for from six to twelve inches from the sides, than in the middle. This is a disadvantage, and lays the manufacturer open to objections which may be urged by unscrupulous buyers, to the effect that the cloth is not according to contract, and in proof of this contention they point to the number of threads in the middle, disregarding the extra number to be found nearer the sides. The manner in which the contraction occurs at the sides may be seen on reference to Fig. 1, which partly shews how the side warp threads are drawn closer together by the drag of the weft. A corresponding drag occurs on the opposite side, not shewn in the illustration. If there were no temple upon the cloth, this contraction would be much greater.

This explanation leads us up to the art of templing. In weaving, quite a number of annoying difficulties result from this tendency of the cloth to contract. In the old days of hand-

Numerous other attempts to improve the temple were subsequently made by various persons, most of which, as is usually the case, carried the problem a little nearer solution. How much of the task still remains to be accomplished we shall not presume to say, as it, no doubt, like other things, varies with changing conditions.

Occupying a prominent place amongst temple makers, and inventors in connection therewith, must be named the firm of Messrs. James Blezard and Sons, Guy Foundry, Padiham. The templing of lightly picked cloths is a comparatively easy matter, the real difficulty beginning when the number of picks increase considerably, and especially when the weft is comparatively low in counts. The greater the number of picks, counts of weft being always considered, the greater is the drag upon the selvage threads of the warp. This proportionately increases the friction upon them, and often causes them to break out; or otherwise sometimes strains or breaks the side dents of the reed. The illus-

ration, Fig. 1, shews an ordinary constructed temple, as at work and in section. It will be seen that it consists of two spiked rollers covered with a cap. Of these we give full-sized illustrations in Figs. 3 and 4. In Fig. 1 the defective action of the ordinary temple is seen in its failure to keep the fell of the cloth extended to the width of the warp in the reed, by allowing the weft to drag in the side threads as shewn. Looking at both illustration and section on left the cause of this will be seen in the fact that the front spiked roller is arranged too far away from its work, which ought to be as near to the fell of the cloth as it is possible to get it. The cause of this setting away will be seen to be the thickness

was substituted a great step would be made towards the accomplishment of their object; this being much stronger and thinner it would allow the arrangement of the roller very considerably nearer the fell of the cloth. The substitution was made, with the result shewn in Fig. 4.

Here it will be seen that the edge of the cap can be set almost upon the last pick sent home by the reed; and the cap itself, being much thinner than as ordinarily made, permits the arrangement of the front roller in the position shewn in the section on the left hand of the illustration, which, as will be seen by comparison with the preceding illustration, is much nearer to the fell. The result was entirely satisfactory,

pivot end, and not on the shoulder. The lubricant is preserved from contact with cloth, or absorption by dust. The temples are suitable for, and work equally well both light, heavy, and strongly picked cloths. The caps being composed of carefully tempered sheet steel are not liable to be broken by the trapping of a shuttle against them, or any of the other accidents to which the old cast-iron material was liable. Perhaps the best test of their excellence is the fact of which we were informed, that the makers, since their introduction, have sold between 50,000 and 60,000 of them. This is testimony which speaks for itself. The makers have adopted the word "TRUE" as a trade mark, and each cap is now stamped therewith.

Those desirous of more information may obtain it by application to Messrs. Blezard and Sons, as above.

STEEL SHUTTLES.—We have an enquiry from the United States for a maker of steel shuttles for cotton looms. I should be glad to learn the name of any.—Address: *Ed. T.M.*

We learn that since 1884 Messrs. Hutchinson, Hollingworth and Co., of Dobross Loom Works, near Oldham, have made over 7,000 of their well-known patent open shed fancy loom, and that the demand for same still continues at a high figure.

News in Brief,

FROM LOCAL CORRESPONDENTS AND
CONTEMPORARIES.

ENGLAND.

Bradford.

Lord Ripon has consented to unveil the statue of the late Right Hon. W. E. Forster, on the 30th of April. The statue has been finished, and is now at the establishment of Messrs. H. Young and Co., Ecclestone Ironworks, Pimlico.

The portrait of Alderman Angus Holden will be presented to the original on Wednesday next, at noon, in the Art Museum, Darley-street. Mrs. Angus Holden will also at the same time be presented with a silver service.

On Monday morning, Mr. John Cheeseborough died at his residence, Henry-street, Keighley, aged seventy-one. The deceased gentleman was formerly an inspector under the Worsted Act in the West Riding, and afterwards, for a time, was superintendent of the local West Riding Constabulary. On retiring from the police force he took the Devonshire Hotel, Keighley. He was a connoisseur of oil-paintings, and collected a number of valuable works.

Blackburn.

After a few days illness, Mr. George Duckworth, of the firm of Messrs. Duckworth and Eddleston, manufacturers, St. Peter-street, died on Friday of last week.

The formal inauguration of a new weaving-shed, built for Mr. Wm. Birtwistle on an eligible site between the Whalley New-road and the Brook near the Cemetery, Blackburn, and to be called the "Florence Mill," took place, by the ceremony of christening the engines, on Saturday afternoon last. The mill is in all respects a model establishment for the weaving branch of the cotton manufacture. Its structures are well planned and solidly built; the shed itself is convenient in size and form, and effectively lighted and ventilated. The warping, winding, and tapping rooms are large and lofty, as also are the engine-house and boiler-house. The engines are of 230 horse-power, designed by Mr. Davies (who has also made the plans for the buildings), have been made by Messrs. Ashton, Frost and Co., and the boiler, a large one of the Lancashire type, comes from the foundry of Messrs. Yates, of this town. The winding frames, looms, tapping machines, and warping mills are supplied by Messrs. Hy. Livesey and Co., Limited, of Blackburn. All the machinery, we need scarcely add, has the latest improvements. The shed will hold 514 looms, and up to Saturday about 260 had been placed. The lessees of the mills are Messrs. Slater

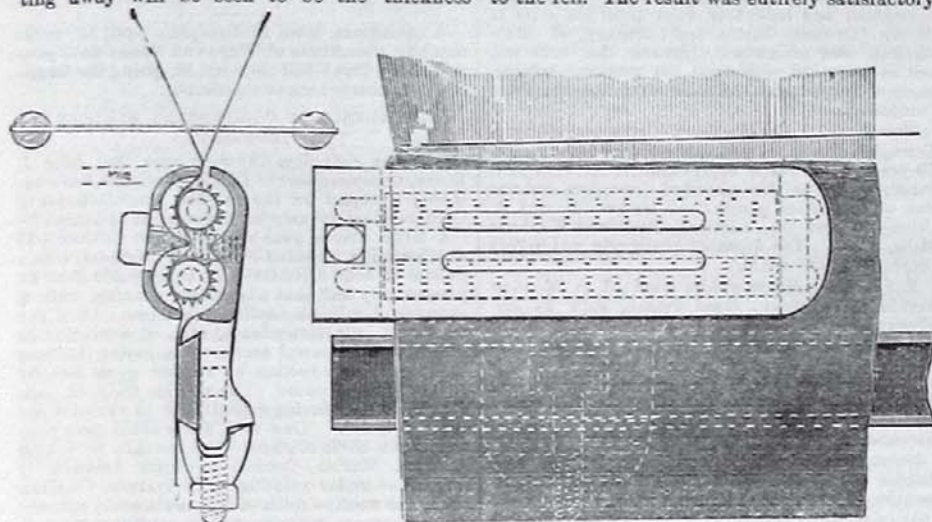


FIG. 1.—ORDINARY TEMPLE, SHEWING CONDITION OF SELVAGE, WHILE WEAVING MODERATELY STRONG CLOTH.

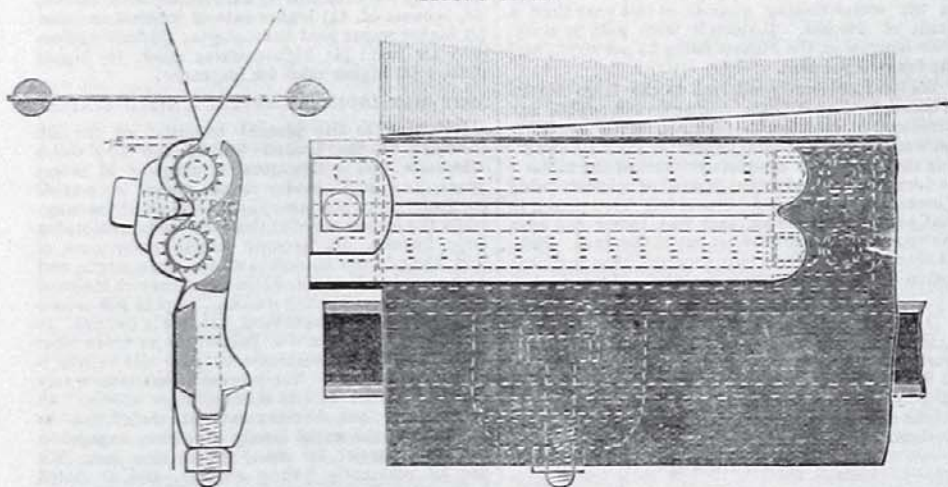


FIG. 4.—THE PATENT TEMPLE, STEEL CAP, AND ADJUSTABLE ROLLER BEARINGS, SHEWING CONDITION OF SELVAGE, WEAVING STRONG CLOTH.

of the cover or cap which does not permit the roller to be set nearer. This allows the drag to take place with the result shewn, and the consequent breakage of threads and damages of reeds to which we have referred above. These defects, continually coming under their observation, induced Messrs. Blezard and Sons to investigate the cause, and endeavour to devise remedies. A long series of experiments revealed to them the fact that if they could arrange their first roller so that it would take hold of the cloth not farther from the fell than one-sixteenth of an inch, it would have a much better result than at any greater distance. But as the cap, which holds the cloth down upon the roller, was in the way and could not be reduced in strength as made in cast iron, the idea suggested itself that if thin sheet steel

at once obviating the evils that had been so long complained of.

The inventors, of course, patented this valuable improvement, and experience has shewn it to be of the greatest importance. By its use a wider, more even, and superior cloth can be made, it being very rare now that the selvage threads are broken, owing to the greatly reduced strain upon them. The reed has been freed also from the great strain upon and frequent breakage of the side dents. Thus both weaver and overlooker are saved from both labour and annoyance, whilst the production of cloth is appreciably greater than under the old system with the defects in force.

The rollers are securely fixed in their position, cannot fall out and be damaged, or knocked out while cleaning. They work with a minimum of friction, the pressure being upon the