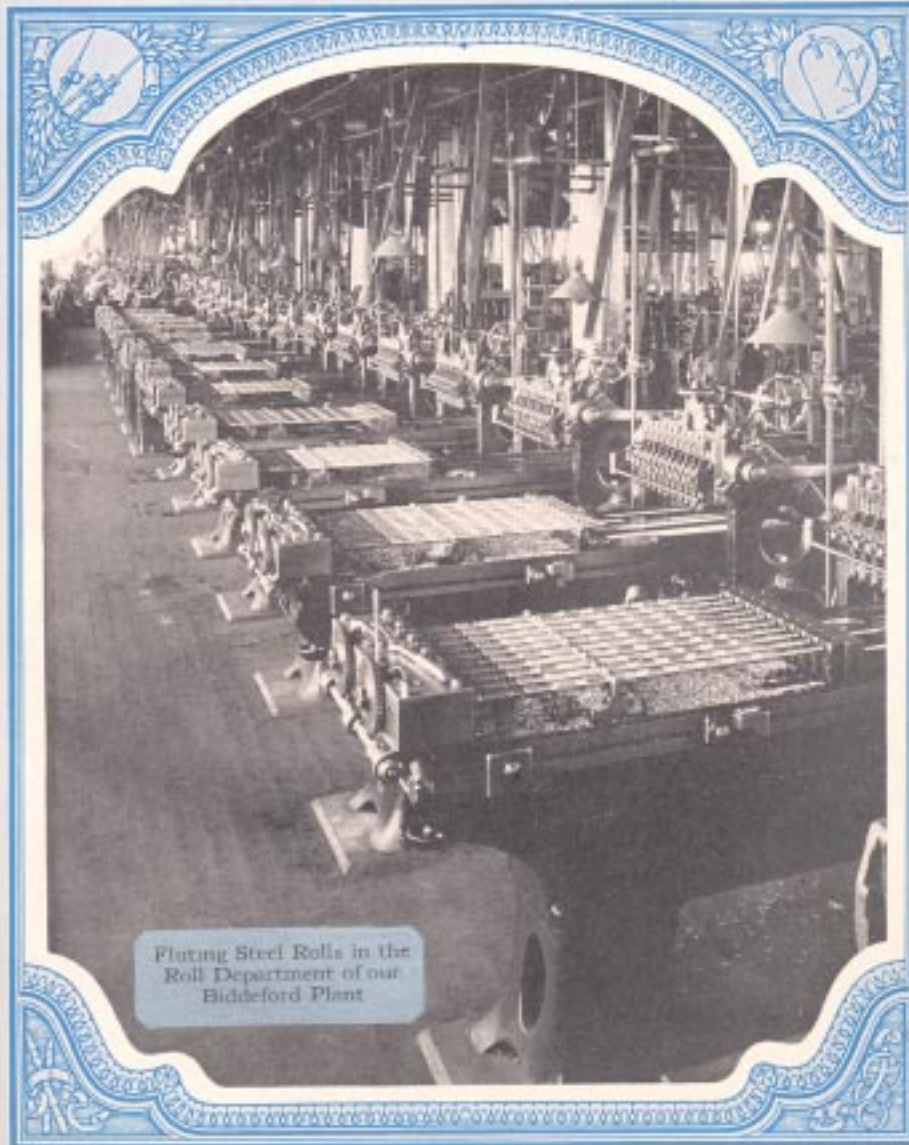


# THE SACO-LOWELL BULLETIN

DECEMBER 1928



Plating Steel Rolls in the  
Roll Department of our  
Biddeford Plant

ACCESSORIES NUMBER

Merry Christmas

and

A Prosperous New Year

**W**E wish to take this opportunity to wish you a very Merry Christmas and a Prosperous New Year. The Textile Industry, as a whole, is beginning to feel that the corner is turned and the upward trend slowly but surely begun. We earnestly hope and believe that this is true; and sincerely trust that you and your company will share during the coming year in this encouraging outlook for the Industry.



# THE SACO-LOWELL BULLETIN

*Issued monthly in the interests of efficient mill operation by the*

SACO-LOWELL SHOPS

147 MILK STREET

BOSTON

CHARLOTTE

GREENVILLE

ATLANTA

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VOLUME I

DECEMBER 1928

NUMBER 10

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## Quality—the Keynote of Saco- Lowell “Accessories”

NO MATTER how perfectly a spinning frame is manufactured, the quality of the yarn spun, in the last analysis, depends upon the quality of the rolls, rings, spindles, and travelers. These are the truly sensitive points in the machine. Not only does this apply to spinning, but also to the rolls in drawing, the rolls and flyers in roving, the rings and spindles in twisting, etc. These all-important parts of cotton machinery equipment are the determining factor in the quality of the finished product. For some reason or other, both the mills and equipment manufacturers have mis-named these items of equipment “accessories.” In reality they are the nucleus around which the rest of the machine is built. The rolls, spindles, rings, and travelers do the actual spinning of the yarn. The rest of the frame, although it be the greater bulk of the machine, is in reality the accessory to these parts.

The Saco-Lowell Shops have manufactured these so-called accessories for a

great many years. Realizing their vital importance in the spinning of good yarn, we have spent a great deal of time and money in an effort to devise the best method of manufacturing these parts, and have done a vast amount of research work to determine the best available material to use in them. Each of the accessories is made in a separate department of our plants, by a trained personnel that has spent many years in perfecting their particular product. The equipment used is the most up-to-date that is possible to procure, while a large portion of it is of our own design and make, to carry out our special methods of manufacture. The materials we use are absolutely the very best for the purpose, regardless of their cost. We are confident that in design, workmanship, and material, our rings, rolls, spindles, and flyers are the best obtainable.

The rest of this Bulletin deals with our method of manufacturing each type of these accessories, although we have made

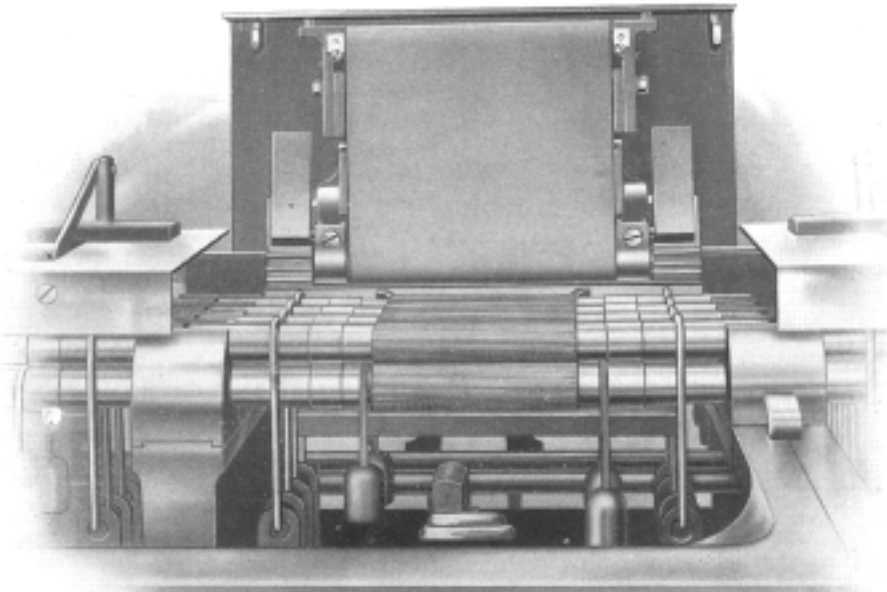
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no attempt to describe in detail our various sizes and types of spindles, rings or flyers, as these are covered in our various catalogues and pamphlets.

### *Metallic Rolls for Drawing Frames*

The Metallic Drawing Roll Company of Springfield, Mass. was the first manufacturer of metallic drawing rolls, in any quantity. They have been making such rolls for nearly forty years, and they built up an enviable reputation for the quality of their product. The Saco-Lowell Shops are the successors to this company, and the entire manufacturing facilities, together with the greater part of their personnel, have been moved to our Newton Upper Falls plant, where they are installed in a separate department of their own, and continue to turn out the same high quality roll.

It is an interesting fact to note, that during the last twenty years over 75% of the drawing frames we have built have been equipped with metallic rolls. These rolls have several advantages over the leather rolls. Due to the meshing of the flutes 25% to 33% higher production is obtained. The rolls, running in collars without friction, allow sufficient space so that perfect attenuation of the sliver is procured without injury. Licking up of the sliver from static electricity and sticky weather is overcome; and the imperfect or "cut work" arising from imperfectly varnished rolls, or rolls run dry of oil, is entirely eliminated. Aside from the above mentioned increase in production, there is a substantial saving in roll covering, varnishing, delays, and bad work caused by sliver breakdowns and licking up. They stand more abuse from unskilled workmen. In addition, the bite of the roll being positive and the draft



Saco-Lowell Metallic Rolls  
(showing revolving clearer)

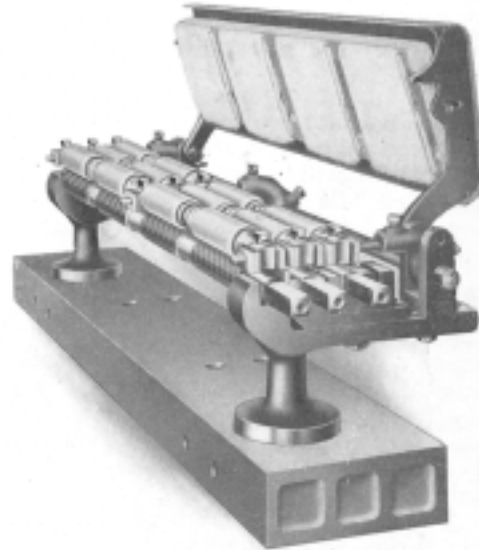
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direct, less weight is required, thus employing less power. Metallic rolls are suitable for long or short staple, coarse or fine goods, and the savings in roll covering alone rapidly pay for their installation.

We make these rolls from the best grade material we can obtain; the steel has a very high percentage of carbon. Thus, extreme hardness is assured. In their manufacture, special machines for the purpose are used. The collars are hardened by a special process which reduces wear to a minimum. The rolls are made in sections and great care is taken to insure the quality being upheld; each section passes through twenty operations and six inspection tests before it is ready for assembly. Every section is ground true to extreme accuracy, the limits being carefully upheld by fine limit gauges and micrometers. This accuracy is upheld from the first steps of manufacturing the roll. With such close limits, every section is identical in size, and repairs are easily made, it being possible to replace any section without the necessity of discarding the entire roll. The smooth "glass-like" finish of our metallic rolls is strictly upheld and together with their hardness insures many years of un failing service.

### Steel Rolls

All our steel rolls are made from carefully selected stock, which is made to our own specifications which are checked by analysis at our own shop before it is used. The screw type of joint is used on the front line of spinning, as this has been found to be the type best suited to the requirements of the fast revolving case-hardened roll; instead of working loose and developing backlash, as the



Roving Frame Square Jointed Rolls

square joint does, after a certain time, it tends to become tighter the longer it is used. This screw joint type of roll is practically interchangeable because of being made in individual sections on centers to precision measurements. Our method of inspection is such that each operation of production is an inspection on the preceding operation and tends toward accuracy and concentricity. By use of micrometer calipers and indicators the diameters, depth of flutes and lengths of sections are checked and held to limits adopted after careful study and research. The fluted portion of the roll or bosses, as they are commonly called, is lapped with emery and oil, insuring an exceptional smoothness to the edges and reducing to a minimum any chance of yarn lapping around the rolls.

The hardness of spinning rolls is a



Screw Jointed Steel Roll

very important item and the case hardening is thoroughly tested on each individual roll.

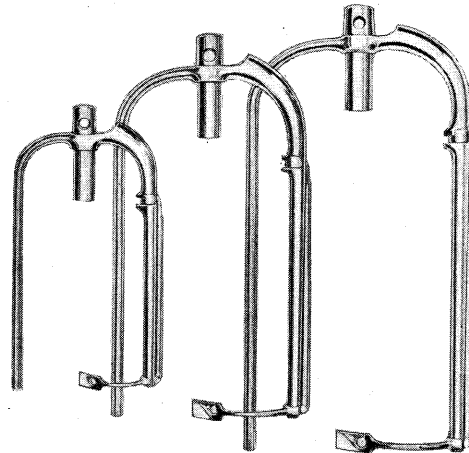
The square jointed types of rolls are carefully drilled and broached on the female end. The other or square end of the roll is machined to a press fit in the other broached hole of the roll to which it is coupled. Each section of roll is turned and ground coupled to the already finished section which is to precede it, the rolls turning on their own bearings. In this way the rolls are turned and ground exactly the same as if their entire length, as placed in the spinning or roving frame, was machined at once. This insures a concentricity of bosses and bearings that can be obtained in no other way.

Twister steel rolls are made from special turned and ground stock and are of the screw jointed type. Special attention is given to the finish, coupling, and straightening of twister rolls. The wet twister rolls are made by drawing brass tubing through dies onto a steel roll. This insures a tight-fitting brass covering to the roll.

### Flyers

A few years ago the Saco-Lowell Shops installed a complete unit for manufacturing their own flyers. At the time all known methods of such manufacturing were thoroughly studied, and our own Flyer department, now located in our Biddeford, Maine, plant, was equipped to produce what we considered the best flyer possible to make. We introduced a number of innovations in their manufacture that did much to improve our flyer over those formerly made. Special dies, jigs, fixtures, and precision tools are used to insure each flyer and presser being an exact duplicate and interchangeable. All parts of the Saco-Lowell Flyer are made from selected high grade steel; and those parts which require particular strength and hard-

ness are drop forged from a special alloy. The Nib Section of the Hollow Arm, where the Presser laps around, is part of the forging, and is not brazed on. This particular feature eliminates the possibility of scaling the inside of the arm when brazing, or breaking off of the arm, and is a very important improvement. All contact points of the flyer, where the roving bears, particularly the inside of the hollow arm, are carefully finished and buffed to present to the cotton a perfectly smooth, free running surface.



Saco Lowell Flyers

The pressers are highly finished and made of drop forged special alloy steel. Special attention is given to the total weight, allowing the proper amounts between the arm and the paddle for correct tension, and also allowing pressers to be changed without affecting the balance of the flyer. Saco-Lowell Flyers are balanced at maximum running speeds, the arms of the flyer and location of presser being carefully gauged. Before being packed for shipment, they are given a visual inspection for finish, checked by gauges for taper, or let-on, socket diameter, hank roving slot, length of hollow

arm, width of arms, location of presser, and balance.

In conjunction with the making of new flyers, we have created an extra division for the repairing of old flyers. There is no doubt that a number of mills have various quantities of damaged flyers which they consider beyond repair but which we know can be put into satisfactory condition at a nominal cost. Any flyer that is worth repairing can be taken care of at about one-half the price of a new one. In fact, on a quantity, we will guarantee that the cost of reworking will not average over fifty percent. We especially solicit the opportunity of repairing, without charge, half a dozen samples for inspection or approval. Flyers of the above type which we usually receive for repairs are out of balance, nose of the flyer battered, key worn out, hollow arm battered, and generally the presser is in such condition that it has to be replaced with a new one. The lower end of hollow arm where the presser arm hole laps the arm is usually worn and in some cases the presser wears right through the arm at this section. The slot in the hollow arm requires regauging to the particular size roving that the mill is using on their flyers.

We cut off the worn section of the hollow arm where the presser rubs, and weld on a new tip:—

True up the nose.

Reream the taper or let-on.



Wooden Flyer from an Old-fashioned Spinning Wheel

Replace worn-out keys.

Regauge roving slot.

Clean out the inside of hollow arm.

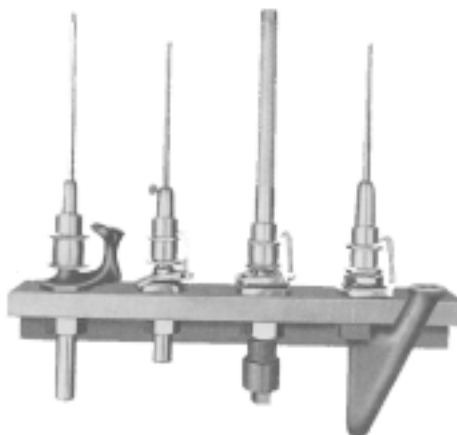
Polish all over.

Balance.

Replace with new presser if necessary.

### Spindles

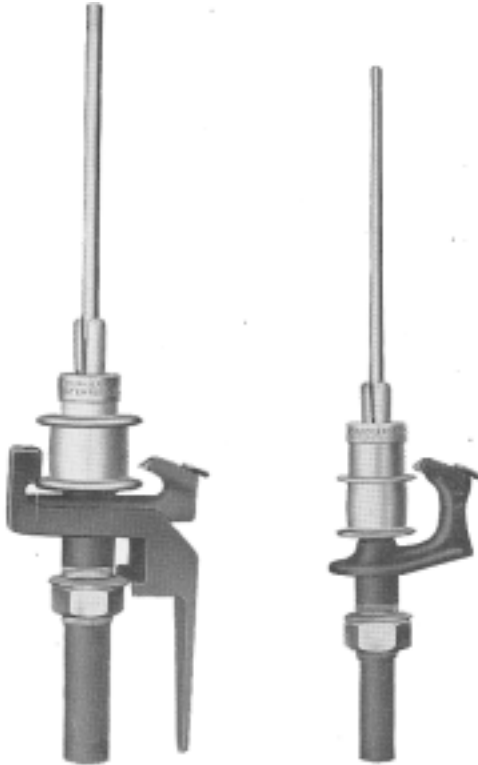
We feel justified in being extremely proud of the Spindle department at our Biddeford plant. We have here a number of men who have spent many years in perfecting our spindles, and they are experts along this line. Their aim has always been to build the best spindle possible to make, and they take continual pride in their accomplishment of this purpose.



Four Types of Saco-Lowell Spinning Spindles

One of the key processes which our spindles undergo is the straightening process. This process we have followed for a number of years and it is accomplished by machines of our own design, adapted especially for this work. The result of this process is that the spindle blade is inherently straight and perfectly true. It is not bent or forced straight, but the internal strains in the steel and its grain tend to make the blade abso-

lutely true; any unevenness or crookedness of the spindle must be forced upon it, and such strain is against the steel's natural tendencies. Such external



Fournier & Lemoine Clutch Spindles

strain as may develop in the subsequent finishing is eliminated when the spindle is completed and the blade resumes its *natural* straightness. This point cannot be over-emphasized, as it results in a spindle whose blade will remain true very much longer and under harder abuse than one made by any other process.

All our spinning spindles are manufactured from electric furnace steel. The steel is made to our own specifications, the analysis having been developed with the idea of producing a very stiff blade which will maintain the straightness and

stand the abuse to which spindles are subjected. The blades are ground in specially designed machines which insure all parts being concentric, so as to produce a true running spindle. After each operation, the spindle is subjected to careful inspection before proceeding to the next step in their manufacture. The bases and bolsters are made from a special mixture of iron particularly suited to resist wear. When the entire spindle is complet , it undergoes several rigid tests with delicate instruments for trueness, accuracy, and smooth running qualities.

We furnish clutch spindles when so required, having adopted the Fournier & Lemoine clutch (Patented) which overcomes the many difficulties formerly experienced with most spindles of this type. There are no sliding parts to wear out or become jammed with lint and yarn, and the bobbin is at all times accurately and positively centered. We can also furnish the new S.K.F. roller-bearing spindle which is now meeting with so much approval and with such excellent results. They reduce power, especially at starting, need but infrequent oiling, run exceptionally smooth, produce cleaner yarn, and are long lived.

The Saco-Lowell high speed spindle was developed to meet the requirements of larger packages and higher speeds. This has been accomplished by means of a special bolster mounting and lubricating features.

### Rings

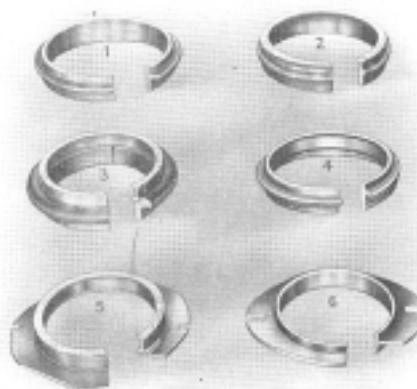
In 1919 we decided to further our policy of controlling our product by the addition of a spinning and twisting ring manufacturing plant, and with this end in view, purchased the Pawtucket Spinning Ring Company, a Rhode Island Corporation, established in 1884. We also took over the entire personnel, a number of whom had been with the Pawtucket Spinning Ring Company since its establishment.



On acquisition of the property, we immediately installed sufficient new machinery to more than triple the former capacity, and also built an addition to the main building, in which is housed special machine forging equipment for producing weldless ring forgings, from which the spinning and twisting rings are machined. We were also pioneers in the use of electrically heated and automatically controlled furnaces for hardening the product, ours being the first installation of this kind in this country devoted and designed exclusively for the hardening and heat treating of spinning and twisting rings.

We manufacture all types and sizes of rings which are in general use, both spinning and twisting. In addition to the usual types of twister ring, we have developed for use on our high speed twister, the Saco-Lowell Vertical High Speed Ring. This ring is self lubricating, having two grooves on the inside with small holes leading from the bottom groove through to the lower back part of the ring, so as to lubricate the foot of the traveler. The lubricant is retained in the top groove when the operator greases the ring in the usual way. This grease melts as the ring and traveler warm up under operation and the grease, slowly melting, trickles down over the inside of the ring, into the second groove and through the small holes. The grooves act as a reservoir for the grease, and the action of the traveler keeps a sufficient amount on the working surface of the ring to insure perfect lubrication. This ring is capable of exceptionally high traveler speeds and cannot be compared with the old type.

Bearing in mind that the true function of a spinning or twister ring is to provide a suitable and long lived bearing for the traveler, we have spared neither material nor workmanship in their manu-



Various types of Saco-Lowell Rings

facture. The steel used in our rings is carefully selected and is of special analysis, found by experience to be the best suited for the purpose. Many of the special processes employed and the machines used in making *weldless* ring forgings, machining and forming, finishing and polishing, are exclusively our own and are unknown to other manufacturers. They have been developed through many years of experience by a personnel who have always taken great pride and care in producing the finest quality ring obtainable. Our method of inspection is rigid and careful, and ensures the quality of the product being always strictly adhered to. The entire process of making our rings is under the direct supervision of a personnel trained by more than thirty years of experience in the manufacture of spinning and twister rings only, and in a plant devoted exclusively to their production.

## The Bulletin in Japan

**W**E recently had a letter written by a young Japanese student working in the Dainippon Cotton Spinning Company of Ogaki, Japan. He said he had enjoyed reading an issue of the *Saco-Lowell Bulletin* that happened to fall into his hands, and wished that we would put his name on our mailing list, that he might receive the Bulletin regularly.

We have had similar letters from many countries and it is indeed gratifying to us to find that our Bulletin is accomplishing its purpose in helping to arouse world-wide interest in better methods of production.

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## Taking Advantage of Improvements

**O**UR engineers are constantly working to improve our product. This improvement is continually going on; it may be a complete new machine which meets an urgent need in the industry, or it might be a better way of forging spindles of which the trade seldom hears, but nevertheless adds greatly to the efficiency of our product. In many cases these improvements are such that they may be adapted to equipment already in existence at a very small cost, and yet add greatly to the efficiency of the machine:—For example, our new Positive Knockoff for Pickers (described in the

May issue of the Bulletin); likewise our new Friction Release, (See July issue of the Bulletin) which automatically prevents breakage of lap racks; our new type Adjustable Grid Bars, which are far more efficient in every way than the old type; the Spiral Spur Drive, which improves the running quality of the Picker; and our improved Eveners, which are not only more effective, but suitable for a much greater range of stock. On Drawing there is our new Spiral Gearing, which assures no chance of backlash between the drawing and calender rolls. Our new Constant Motion Chain Drive for Roving frames is adaptable to old frames and a great improvement (fully described in the August issue of the Bulletin). Then there is the Positive Gear Drive for Slashers, which can be easily applied to old machines. When slasher cylinders are revolved by the pulling of the warp, a considerable strain is put on the yarn, resulting in excessive breakage of ends and running weak yarn; with this gear drive all strain is eliminated. The Atkins Syphon system, described in our August Bulletin, eliminates the old Bucket method of draining cylinders and increases production. Another attachment for slashers of great benefit is our Cut Marker, which marks the warps at fixed intervals with number or pattern style and determines the exact length of cut woven in the loom.

These are but a few of the improvements and attachments that can be economically applied to existing equipment. They help bring such equipment up to date and increase to a marked degree the efficiency of the machines and the quality of the product.

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*The*  
**SACO-LOWELL**  
*Organization*

offers valuable experience to its customers. Specializing in machine operation, the members of this organization have had an unlimited variety of mill problems to face. On the strength of their accomplishment, the Saco-Lowell Shops have grown, developing many products that are now standard in the industry.

We offer a complete line of cotton spinning machinery, each unit of which is a standard in its field.



