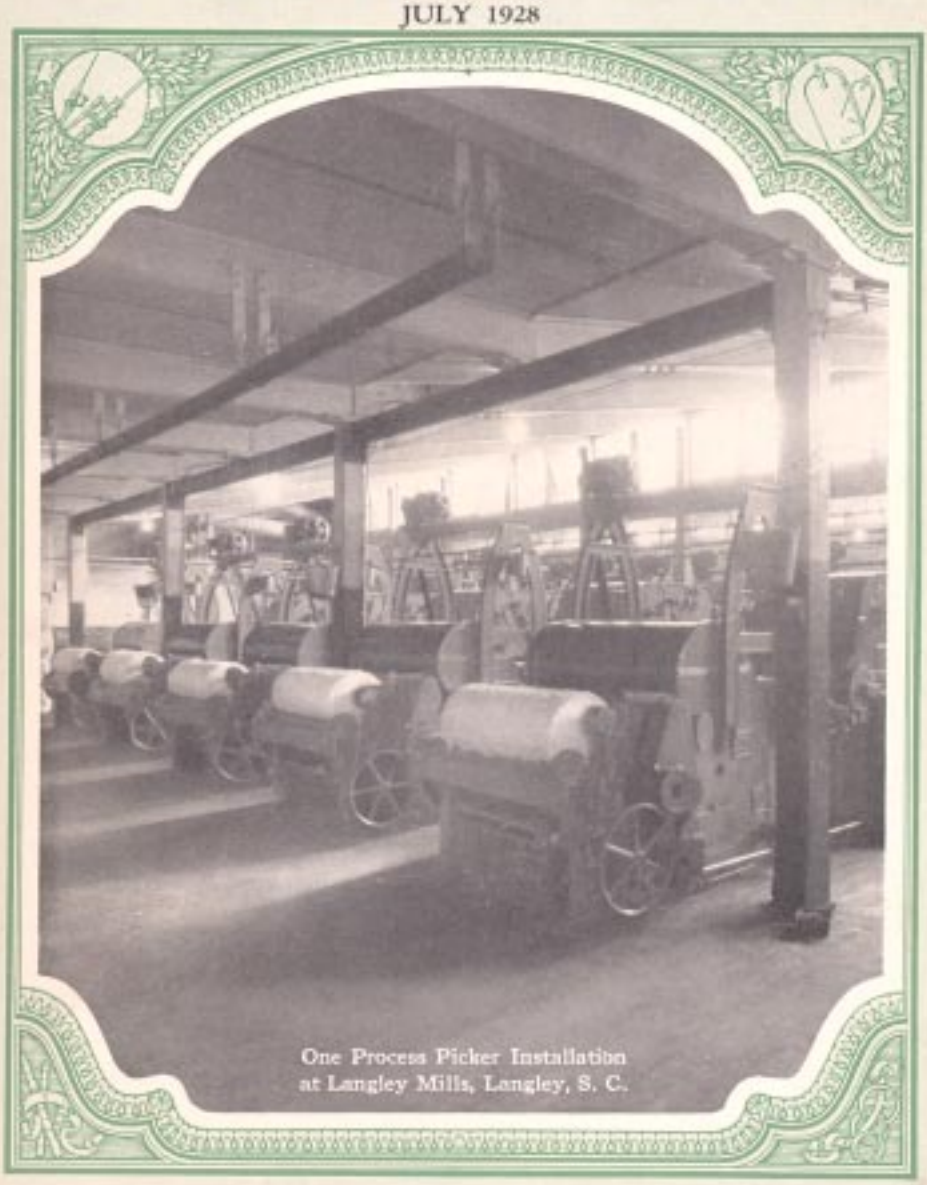
THE SACO-LOWELL BULLETIN

JULY 1928



One Process Picker Installation
at Langley Mills, Langley, S. C.

SPECIAL EDITION ON PICKING

One Process Picker with Synchronized Control

Successful Mills - - -

Line up with KITSON PICKING

SACO-LOWELL'S leadership in picking has been made possible by constant development to meet new conditions. Kitson engineers have specialized in opening and picking. Close contact with mills permitted us to meet problems when they arose,—and to have a solution ready.

Saco-Lowell's One Process Picking is our most recent contribution to American Mills. Successful mills have used Saco-Lowell Picking for 75 years. Successful mills are installing One Process Picking.

SACO-LOWELL

MANUFACTURERS OF TEXTILE MACHINERY

147 Milk Street, BOSTON, MASS.

CHARLOTTE, N. C. GREENVILLE, S. C. ATLANTA, GA.

THE SACO-LOWELL BULLETIN

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SACO-LOWELL SHOPS
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CHARLOTTE GREENVILLE ATLANTA

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One Process Picker with Synchronized Control

FOR several years there has been an interest in the possibility of omitting the Finisher Picker and using the Breaker Lap on the Card. In the fine goods mills in England, there has been considerable success with this sytem and a few American mills have adopted it with varying results. It was most successful where a bin system was used with overhead feed regulator and a three-beater machine employing an Evener, two 40″ diameter cylinders and one 16″ or 18″ Beater. However, in the coarser goods mills where the amount of cotton used was so great as to demand the use of the Automatic Distributor connected directly to the opening machinery, this method of operation proved too unstable for average mill conditions.

The perfection of a satisfactory electric control of the feed from the opening machinery, together with improved gate operating mechanisms on the Distributor and greatly improved cleaning machinery in the Opening Room, brought One Process Picking up for further consideration. Realizing this fact, our engineers made a very thorough study of European systems. Most of the One Process Pickers were the three-beater type with an evener at the first section.

In this type of machine, there is a great deal of cotton in process between the Evener and the Calender and this has been the source of uncertainty in the minds of mill men. It is certain that there are three places in the lap subject to unevenness, one at the stopping and starting, when the full lap knock-off operates, one on each screen, as against but one such place where a single beater machine is used.

It became evident that this form of One Process Picker could not meet American mill conditions, and that if American mills were to profit by this system, a special Lapper must be designed to meet existing conditions. Our engineers were, therefore, prompted to design and build a totally new One Process Lapper which would be adapted to the requirements under which American mills operate.

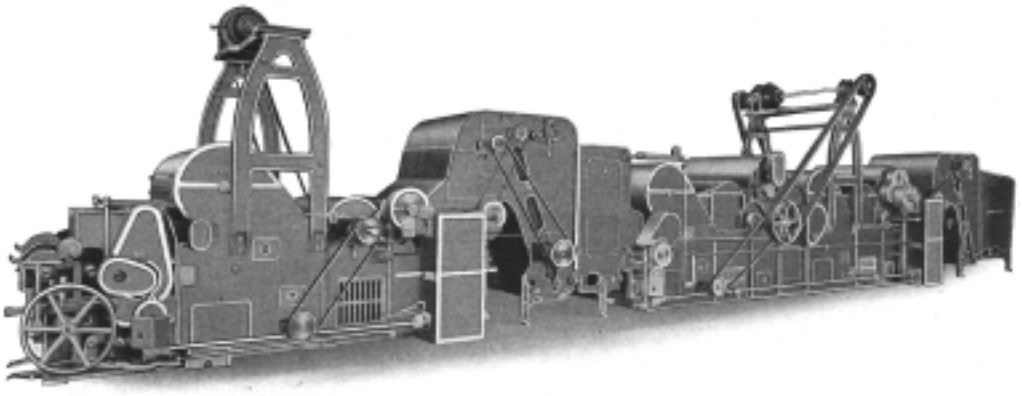
Our first experimental installation was made in a well-known Western Massachusetts mill, and was made up of various sections of our existing regular line of machinery. The principal object kept in mind in these experiments was to retain as many as possible of the advantages of the usual two process picking,—the equivalent of doublings, and the uniformity of lap produced by a one-beater finisher.

The introduction of a Feeder between the first two Buckley Sections and the last blade section accomplished this result. We put an evener on the first and last section, and naturally had to make many minor readjustments. The results from this combination were so successful that we placed a similar machine in a large mill in Lowell, Massachusetts, which was running a totally different class of goods. This second installation naturally had many refinements over the first.

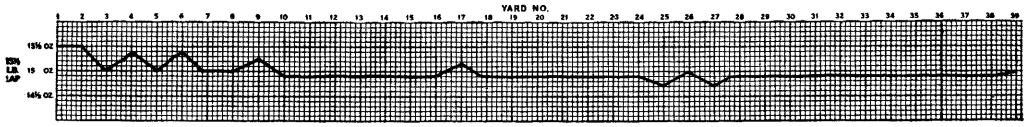
The theory on which this machine was designed was, briefly, that sufficient cleaning could be done in the opener sections and a rough evening accomplished which would be capable of delivering a sheet within 5% of constant to a Feeder. This Feeder would then provide a certain amount of mixing which would offer a satisfactory substitute for the ordinary blending on the finisher apron. It would, at the same time, provide a very constant feed to a one-beater Lapper, because of the constant level at which the cotton in the hopper would be maintained. There could be but one uneven spot in each lap and that would be at the stopping and starting.

In actual practice, it was found that the first Evener often had a tendency, over long periods, to run steadily light or heavy. This caused a variation in the level of stock in the Intermediate Hopper which seriously affected the weight of the finished lap and also forced the operative to make an adjustment. It was also found that an adjustment of the final evener required an adjustment of the first evener but not always in the same proportion nor the same direction. Consequently, where close weighings were required, a great deal depended upon the judgment of the operative.

A stop and start mechanism was open to the objection of considerable variation in the level in order to operate. It was ruled out. There was also a tendency of the stock in the Hopper to mat together in a sort of lap and the mixing effect was lost to a considerable extent. It was, therefore, decided to disconnect the pedals from the cone frame of the first Evener, insert a rake in the Intermediate



Saco-Lowell One-Process Lapper



Graph showing the yard-for-yard variation in weight in a 45½-pound lap taken at random. Note that variation is less than one-half ounce either way.

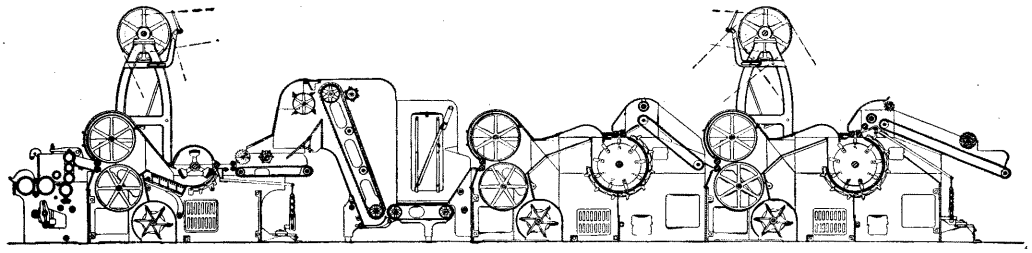
Hopper and through suitable linkage to connect this rake to the belt shipper of the cone frame. The control of the stock level in the Intermediate Hopper then became automatic, any variation being compensated for by a variation in the feed of the first Feeder and feed rolls. The rolling action of the stock against the rake breaks up any tendency to form into a lap and aids in giving the desired mixing effect necessary for proper blending. The complete machine was, therefore, perfectly synchronized.

The results were far above even our own hopes, the laps being far better than on their regular two process, running week after week within very close limits, both yard for yard and total weight (see graph). Having thus determined the best combination for a One Process Picker, we designed a totally new machine on the basis outlined above, each section of which was designed for that particular combination. The first of these was installed in a well-known gingham mill near Boston and its immediate success was indeed gratifying.

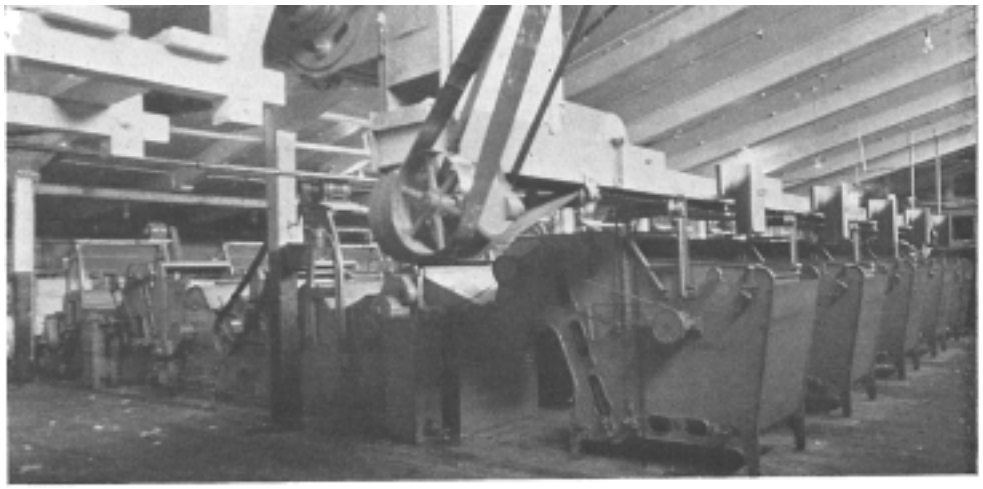
The advantages which were to be expected from the One Process Picking have been realized in these installations; and others, which were not anticipated, have become apparent. Of course, the main considerations were quality and labor saving. The evenness of lap is better than could be expected from two process Picking. This is due to the fact that in any lap the density varies from the outside of the lap, where the stretch has released some of the effect of heavy calendering, to the inside next to the roll where the stretch is minimum. Therefore, proper creeling of laps on the apron of a finisher picker delivers four different densities of cotton to the Evener at the same time. As the Evener weighs by measuring the thickness, this change of density is a serious defect, particularly where the operatives are careless in creeling.

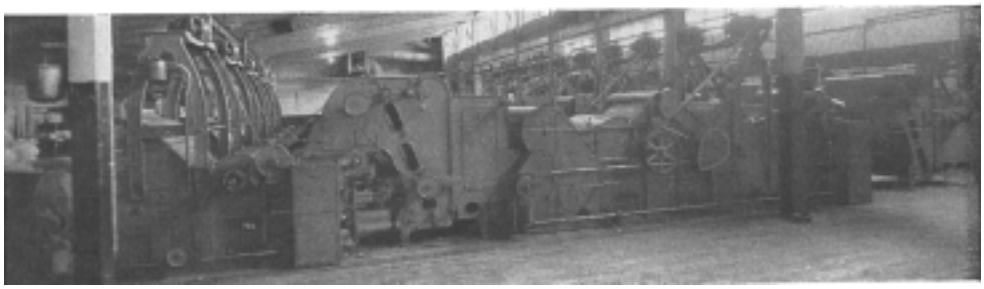
The yard for yard weighings are excellent and show a remarkable steadiness. There are no wide variations such as are present in the finisher laps where careless creeling causes piece-outs and doublings.

The production is considerably above that of the Finisher, 300 to 350 pounds per hour of 12-ounce lap proving not at all excessive. The 24″ Buckley has proven its supremacy over all other sizes and styles of beaters, not only in pickers



Sectional View of One-Process Lapper





Two views of the picker room at the Langley Mills, showing the battery of five Saco-Lowell One-Process Lappers.

but also in our No. 12 Lattice Opener and Cleaner, as the most efficient cleaning machine, and only type of large beater that will form a good sheet. By its use in the first two sections of the One Process Picker, it is possible to reduce the beating to a minimum, and, at the same time, a high degree of cleaning is obtained through the eighty Grid Bars which cover 270° of the cylinder surface. Such beating as is done on the final beater is on well-opened, loosely sheeted stock instead of on four heavily calendered sheets held tightly by the feed rolls. This is a very advantageous feature.

Foreign matter that remains in the lap is so loosely held that it is readily removed by the licker-in of the Cards. The sliver from the Cards shows remarkably even, as determined by numerous weighings. It is very bright and clean even where low grade stock is used. In short, there seems to be no legitimate argument against the use of this arrangement when judged from comparative tests with two process work in these several mills.

Our next installation of this machine was at the Langley Mills, Langley, S. C. This mill, having sufficient opening and cleaning facilities to make One Process Picking advisable, changed their whole mill onto this sytem and installed five of

our regular one process pickers, which are now running night and day to the complete satisfaction of the mill.

When the installation was partially completed the mill had half their work on three process and half on one process, giving an excellent opportunity to make conclusive tests upon the merits of both systems. It was found that the yarn made from the one process pickers was better in every way than on the three process. This was undoubtedly due not only to the increased uniformity of the lap, but also to the gentler treatment of the cotton, as the total beats per inch on the one process picking was only 28, while on the three process it was 124. There was a very noticeable improvement in the appearance of the yarn, it being much freer of black specks and nips. It was interesting to note that in the waste under the last beater (16″ Blade) of the one process picker, the seeds were not crushed. They were taken out whole while, under the beater of their old finisher pickers, the seed was badly broken up from being crushed in the calender rolls of the breaker and intermediate pickers. Naturally, parts of this broken seed stayed in the work. When sections of the laps from the one process machine were compared with those from their old finisher by holding up to the light, the difference was extremely marked, the lap from the one process being of exceptional equal density from selvage to selvage.

The yard for yard evenness of the laps runs exceedingly constant. Four laps taken at random from these machines showed a total variation in yard for yard weighings of .63 oz., .72 oz., .80 oz., and .69 oz., while one taken from their old Finisher with P & D Evener on three process showed 2.80 oz. total variation. These results are being accomplished day after day. They are not simply especially good examples but are the regular work that these five machines at Langley are consistently doing. The mill tells us that the small number of laps lost is almost incredible. In addition to the better work they are obtaining, they have taken seven men out of their picker room, a very substantial saving in labor.

The success we are having with this machine is indeed gratifying and assures us that, in time, one process picking will be the rule rather than the exception. Just as improved opening machinery, the general use of the Vertical Opener, etc., made two process picking possible, so has the further improvement in opening and cleaning of the last three years made one process picking a practical and economical proposition. The only element needed was the introduction of a suitable one process lapper. The superiority of our machine is undoubtedly due to four principal features: first, the general design followed that has always made Kitson pickers a superior product (see article in this issue); second, the synchronized control of eveners and rake in the intermediate hopper; third, the beating of loose, fluffy stock, by the "finisher beater" instead of four hard laps; and fourth, the stronger yarn it is possible to produce because of the gentle treatment of the cotton. The last 16″ beater is the only one where the stock is beaten from off its feed rolls, as the first two 24″ Buckleys gently handle loose open stock that is sheeted from above.

We feel confident that many mill men will be anxious to look this machine over and see for themselves the wonderful results it is producing in the mill. We can easily make arrangements for this as we already have three installations in the North; in the South we have five mills running all their work on this system. (At the time of printing, it will be a few weeks before some of these last installations will be completed.) In addition, there is so much interest in this machine and so many mills deciding to install the same, that to make a personal inspection of our One Process Picker operating under actual mill conditions will be an easy matter. Do not hesitate to have us make arrangements.

Kitson Pickers—A Superior Product

THE introduction of our 24″ Buckley section was one of the greatest improvements in Picker design of the last few years. We introduced this machine to the trade a little over a year ago, and the results we have obtained have been most satisfactory indeed. During this last year we have conducted many tests with this machine in competition with the 40″, and in every instance we have been able to obtain a cleaner and evener lap with the 24″ machine.

The 24″ section in this machine embodies the same mechanical principles as our 24″ Lattice Opener and Cleaner which has become practically standard equipment in the cotton mills of this country during the last two or three years. The cotton as it is fed into the first Buckley in this machine goes through in a heavy sheet and is picked off by the beater blades when hanging down between the feed rolls. The stock coming through in this manner makes it almost impossible for the beater picks to injure the fibres, as is found to be the case when beating directly from the feed rolls.

Our grid bars, 80 in all, cover 270 degrees of the entire circumference of the beater, whereas on the ordinary 40″ beater a range of only 90 to 180 degrees of the cylinder is covered. The first bar is set adjacent to the second feed roll so that cleaning starts immediately after the cotton is picked from the rolls. It is a known fact that the most effective cleaning is accomplished on the first few bars on any machine. That is why we arrange our bars so close to the feed roll.

We have arranged a baffle plate directly under the center of the cylinder, which extends from the floor to the grid bars. There are 54 grid bars on the feed side of the baffle plate and 26 on the delivery side. From our tests we have found that the amount of cleaning on either side of the baffle plate is proportional to the number of grid bars. In other words, we get about two pounds of dirt on the feed side against one pound on the delivery side. This shows that all of our bars are effective. The droppings under the feed side are mostly sand and leaf, while the droppings under the delivery side consist mostly of seeds and motes.

We decided on a 24″ cylinder after considerable experimenting, and have found that it is equally as efficient for both opening and cleaning. The action of the air currents set up by the cylinder and the angle of the grids are the determining factors in this design. The action of this cylinder is to throw the cotton tangently against the grids, from which it returns at an equal angle to the cylinder.

With a cylinder larger than 24″, the curvature of the grids begins to approach a straight line, and due to this fact it is obvious that the cotton tends to go around the grids without resulting in effective cleaning. In other words, the larger the cylinder the nearer the design and effectiveness approach a set of grids in a cleaning trunk. With cylinders larger than 24″, the air currents set up are variable in their action and are very difficult to control, with subsequent uncertainty as to results. The cleaning power and sheeting are affected by these conditions, and satisfactory results cannot be safely predicted.

Our newly designed grid bar is just as small in cross section as is practical. The cheeks, each set consisting of ten bars

throughout the entire circumference, can be adjusted independently of each other, which shows how flexible these bars are for varying mill conditions.

Apart from the question of diameters of beaters, we have recently made several other changes and improvements in the design of our Pickers.

In order to insure an exact length of lap, a new Differential Knock-off has been developed which is both instantaneous and positive in its operation, by means of which laps of exactly uniform length can be obtained. This was not possible with the ordinary type of knock-off.

In the head of the calender rack we now install ball bearings on the small rolls. While these rolls rotate very slowly, they operate under a very heavy load. This, with their location, made it very difficult to lubricate them properly. To overcome this difficulty we installed a ball-bearing roll which is giving very good results indeed.

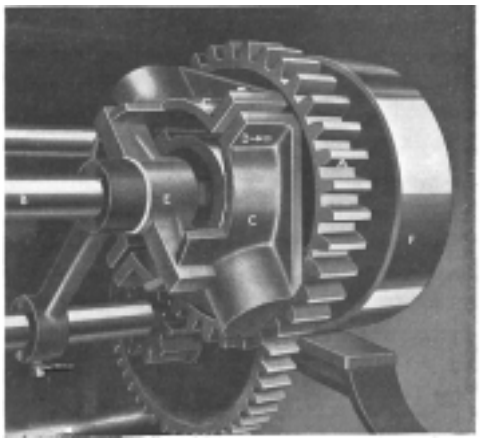
The demand for firm, hard laps requiring heavy friction on the calender racks, and the uncertainty of the amount of pressure exerted by the brakes, has caused considerable breakage of lap racks, gears and rolls. To prevent this breakage, we have developed a safety device on an entirely new principle, one which is a great improvement over previous types. This device we call a Rack Friction Release, and it is described on this page.

Another feature of our pickers is the spiral spur drive which replaces the old bevel gear drive on the side shaft. It is simple in design, is noiseless, has few running parts, runs in self-aligning ball bearings, and is extremely rigid.

All our pickers are completely ball-bearing equipped.

New Friction Release for Calender

WE have recently developed a friction release for calender racks on our pickers. It operates on an entirely new principle and is far superior to any release yet devised. In operation the rack is released under any excessive pressure, and returns automatically to working condition after the abnormal pressure is relieved.



New Friction Release for calender racks on Saco-Lowell Pickers

Referring to the accompanying cut, it can be seen that gear "A" is loose upon shaft "B" and carries a double cam surface in which there are two spots to receive two plungers which are pressed down into position by springs within the clamp "C". These two clamps are held together by the screws "D" which are the means of adjusting and controlling the pressure exerted by the plungers. A driver "E" is keyed to the rack shaft and fits into grooves in the clamps which

drive through the gears to the friction pulleys, "F".

In operation the racks are lifted by the increasing thickness of the cotton under the lap roll, and turn the rack shaft through the rack gears. The driver "E" then turns gear "A" through the contact of the plungers. When the pressure becomes so great as to endanger the rack or the rack gear, the plungers are forced out of the spots onto the small radius of the cams.

This allows the rack shaft to make more than one-quarter of a revolution, releasing the pressure on the lap roll. When this occurs, the operative can see the racks lift or if he doesn't see this, he will find a very soft and oversided lap. When the next lap starts to form, the plungers will automatically return to their proper positions in the spots. If the trouble with the friction has not been remedied, the release will again operate and another soft lap result. No other damage can be done.

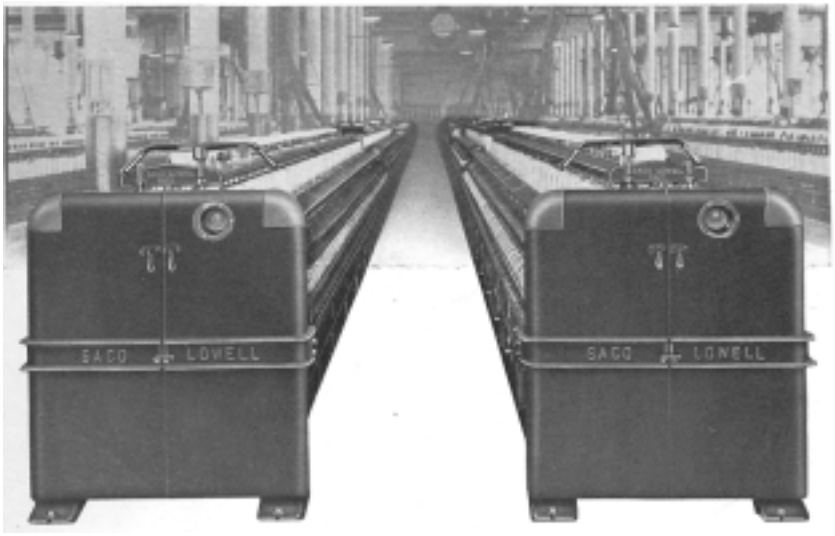
New Beater Guard for Saco-Lowell No. 12 Opener

THE expense, delays, and breaking down of operative morale that even the smallest accident causes are becoming matters of increasing importance to mill management. The Saco-Lowell Shops are ever alert to make our machines danger-proof, in the interest of humanity and in line with good business practice.

It has been brought to our attention on two different occasions that serious injuries have occurred by an operator putting his hand through the hand hole in the sheet metal outlet mouth of our No. 12 Opener, his fingers becoming caught by the beater.

When a bung-up occurs, the natural thing is to shut the machine down, and as the beater runs in ball bearings, the momentum continues to revolve the beater a long while after the power is shut off. The operator, in his anxiety to pull out the congested cotton, opens the door in the outlet mouth and starts to pull the cotton out of this opening. When he gets down far enough, it is possible for his fingers to come in contact with the beater. If the beater has not stopped revolving by the time his hand gets to that point, he will surely injure the portion of his hand that comes in contact with the beater.

Our new safety device enables us to make the outlet mouth without a hand-hole. Before the operative can get his hand into the machine to clean out the congested cotton, the beater must come to a dead stop, in order that the beater lock may be disengaged. This lock automatically releases the sheet metal cover so that there is a wide opening, through which the cotton may be easily removed. When the sheet metal covering is closed again, the plunger on the beater lock must be lifted before the beater can turn. This movement automatically pushes the slide in contact with a dog that holds the sheet metal covering or guard in position. This new guard can be applied to all Saco-Lowell No. 12 Openers at small expense.



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High Production -- Low Cost

RING FRAMES have been built in the Saco-Lowell Shops ever since their invention. And each succeeding model has contained improvements and refinements over preceding types.

In seeking high production and low costs, you can find no surer solution to the problem that is confronting every industry than by installing new Saco-Lowell frames. They are up-to-the-minute in design. They are of heavy, rigid construction, the whole unit being machined to that nicety that has made the name Saco-Lowell mean "perfection" the world over.

We recommend to your attention the development of Saco-Lowell Long-Draft Spinning, as outlined in our monthly publication, "The Bulletin." Send for a copy of the April issue.

"The Bulletin" is published regularly to acquaint the industry with new developments in textile machinery. We shall be glad to place your name on the list to receive it, marked for your special attention.

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