

CLOTH ROOMS

(PART 2)

Serial 500B

Edition 1

TRIMMING-AND-INSPECTING MACHINES

1. In many mills where the cloth manufactured does not require shearing, heavy brushing, or calendering, or is not of sufficient strength or suitable construction to withstand the strain of such processes, the shearing-and-brushing machines of the types previously described are not used; this also renders the use of sewing-and-rolling machines unnecessary. In place of these machines one known as the **trimming-and-inspecting machine**, sometimes called a *cloth trimmer*, or a *brushing-and-inspecting machine*, is adopted. The object of this machine is to give a slight brushing to one or both sides of the fabric, thus removing loose threads, lint, dust, etc., and at the same time to afford a ready and rapid means of inspecting the cloth, if so desired. The machine is usually constructed to take the cloth in short pieces just as they are taken from the loom, although in some few cases it is made to take a roll from the sewing-and-rolling machine. It is also sometimes built without a brushing arrangement, in which case it becomes merely an inspecting machine.

A view of a common type of cloth trimmer is given in Fig. 1, while a section through the machine is shown in Fig. 2. This machine is built for both brushing and inspecting and is constructed to receive only one piece, usually either a single or a double cut, so that the cloth is not passed through the sewing-and-rolling machine before coming to this machine. The piece of cloth *n*, Fig. 2, is placed in the cradle *n*, and the end passed over the roll *n*, partly around

the roll n_3 , and then to the roll n_4 , from which it passes into the machine. The cloth then passes partly around the roll n_5 , after which it comes in contact with the brushes n_6 , n_7 , which may be arranged according to several methods. In some cases only one brush is used, which brushes the face of the cloth, while in other cases two brushes are used, both coming

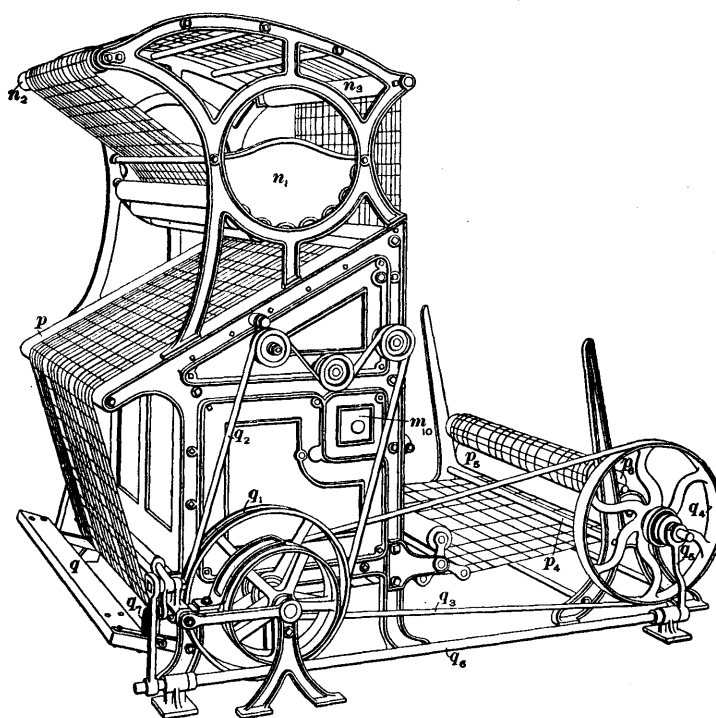


FIG. 1

in contact with one side of the goods; in still other cases the brushes are arranged as shown in Fig. 2. The brushes revolve in the opposite direction to that in which the cloth passes. From them, the cloth passes partly around the roll n_8 , and is then lightly brushed by the brush n_9 , after which it passes on to the inspecting table p , which is painted black. As the cloth passes over this table the attendant

closely inspects it. In case any defect is noticed, the machine is stopped and the defect marked either by passing a short piece of colored thread through the selvage of the cloth, so as to call attention to it later, or, if possible, remedied at this point. From the table p , the cloth passes around the roll p_1 , under the machine, then over and under the spreader

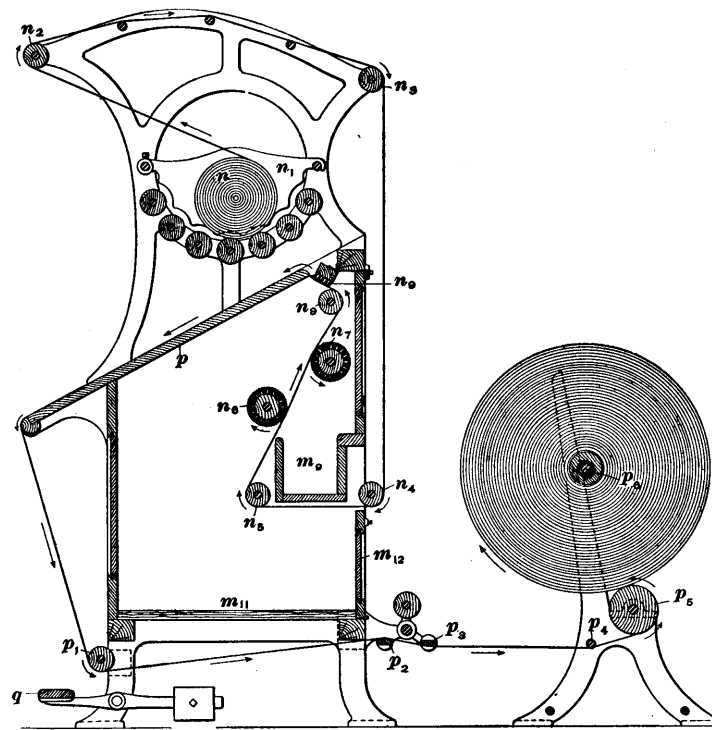


FIG. 2

bars p_2 , p_3 , respectively; these spread out the cloth so as to remove wrinkles, after which the cloth passes to the rolling head—under the rod p_4 and partly around the roll p_5 —and is finally wound on the roll p_6 . The outer surface of the roll p_5 is rough, thus enabling it to grip the cloth and draw it through the machine.

A flock box m , is provided with a door m_1 (Fig. 1), by which the lint that falls from one side of the cloth may be removed. The lint from the other side falls into the space m_1 , and is removed through the door m_1 . There are other doors in the casing by which the brushes may be reached. Threads should be picked off the brushes and lint removed from the box and enclosed space twice a day.

2. The driving arrangement of this machine is shown in Fig. 1. The driving belt is shipped from the loose to the tight pulley by means of the foot-board, or treadle, q . It is necessary, in order to keep the machine in operation, for the attendant to continually press down on this board, since a spring q , together with a weight at the inner end of the arm supporting the foot-board tend to bring it up and throw the belt from the tight to the loose pulley, thus stopping the machine. On the shaft with the tight and loose pulleys is a pulley q_1 that drives, by means of the belt q_2 , the brushes n_1, n_2 , Fig. 2. On this same shaft is another pulley that drives, by means of the belt q_3 , a pulley q_4 loose on the shaft with the roll p_1 . As the pulley q_4 is loose on the shaft, no motion will be imparted to the roll p_1 unless some other mechanism is brought into operation. This mechanism is as follows: The hub of the pulley q_4 forms one-half of a friction clutch, while the other half, which slides on a key on the shaft carrying the roll p_1 , is controlled by an arm q_5 setscrewed to a rod q_6 . When the belt is shipped from the loose to the tight pulley, by pressing down the foot-board q , the rod q_6 is turned in such a direction by the arm at its outer end and the mechanism connecting it to the foot-board as to throw the upper end of the arm q_5 toward the machine, thus connecting the two halves of the friction clutch and causing the pulley q_4 to revolve the roll p_1 . If some such arrangement as this were not adopted, the momentum of the machine would cause the roll p_1 to continue to revolve for a certain length of time after the belt was shipped from the tight to the loose pulley. Since, however, in case a defect is noticed in the cloth as it is passing over the inspecting

board p , it is desired to stop the cloth instantly, the friction arrangement is adopted, which allows the pulley q , to revolve without affecting the roll p , in case the two halves of the friction clutch are not connected.

When the operator desires to reexamine any of the cloth that has passed forwards or to return the cloth so as to rectify some fault that has been noticed, the foot-board is allowed to rise, which disconnects the rolling head from the driving power and allows the cloth to be easily pulled back. Some trimming machines are constructed with a reversing motion by which the operator allows the main foot-board to rise and then, by pressing down a foot-board at the side, causes the cloth to pass through the machine in the opposite direction to that in which it usually travels. The brushes do not revolve while the cloth is running in the reverse direction.

3. As it is usually desired to remove the cloth from the trimmer in a large roll, it is necessary to connect the tail-end of each piece of cloth that is passed through the machine with the end of the new piece in the cradle. This is done by sewing the ends of the pieces together by hand.

4. A machine of the type described, when constructed to take 40-inch cloth, occupies a space of 5 feet 6 inches in width and 6 feet 6 inches in depth from front to back. The driving pulleys are 12 inches in diameter with a 2-inch face and when operated continuously at 300 revolutions per minute cause about 50 yards of cloth to pass over the inspecting table per minute. This is a somewhat excessive speed for inspecting, hence these machines are more commonly operated at speeds of from 200 to 240 revolutions per minute. These latter speeds cause from 33 to 40 yards of cloth to pass over the inspecting table per minute.

The trimming machine, although provided with an inspecting arrangement, is not used for the inspection of every style of cloth made in a mill, since some styles require a more careful inspection; in such cases the trimming machine is used merely for the purpose of lightly brushing the fabric, and the cloth is inspected after it has passed the cloth folder

In still other cases, the trimming-and-inspecting machine is used for inspection only, the brushes being dispensed with. This is especially the case with certain fancy fabrics, where the brushing would disarrange the floating ends on the face of the cloth and destroy the fancy effect desired.

FOLDING AND MEASURING

CLOTH FOLDER

5. After the cloth has been treated either by the shearing-and-brushing machine or by the brushing-and-inspecting machine, it is usually folded on a machine known as a **cloth folder**. A view of this machine is shown in Fig. 3, while a section through the machine is shown in Fig. 4. The roll of cloth r , Fig. 4, is placed in the stands r_1 and the end passed between the rolls r_2, r_3 , from which it falls into a curved zinc apron r_4 . The rolls r_2, r_3 draw the fabric from the roll of cloth r at a speed substantially equal to that at which the cloth is folded. Since, however, the folding operation must necessarily be intermittent in its action, a surplus of cloth is drawn from the roll r and deposited in the apron r_4 before the machine is started in actual operation. This accumulation is used to compensate for the irregularity between the rotary motion of the rolls r_2, r_3 and the intermittent action of the folding mechanism. The zinc apron r_4 also serves to keep the cloth from coming in contact with the floor. From the apron r_4 , the cloth passes in front of the guide roll r_5 and over the guide rod r_6 , from which it passes between a board r_7 and a friction bag r_8 . The cloth then passes forwards and under a friction board r_9 and over a friction board s , between the guides s_1 , Figs. 3 and 4, and thence around a roll s_2 , to the folding blades s_3 , by means of which it is folded on a table t . The folding blades consist of a frame made of two blades held in end pieces s_4 , each of which has a projecting stud that is supported by a rod s_5 on each side of the machine. These folding blades are operated, as will be explained later, by a rod s_6 on each side of

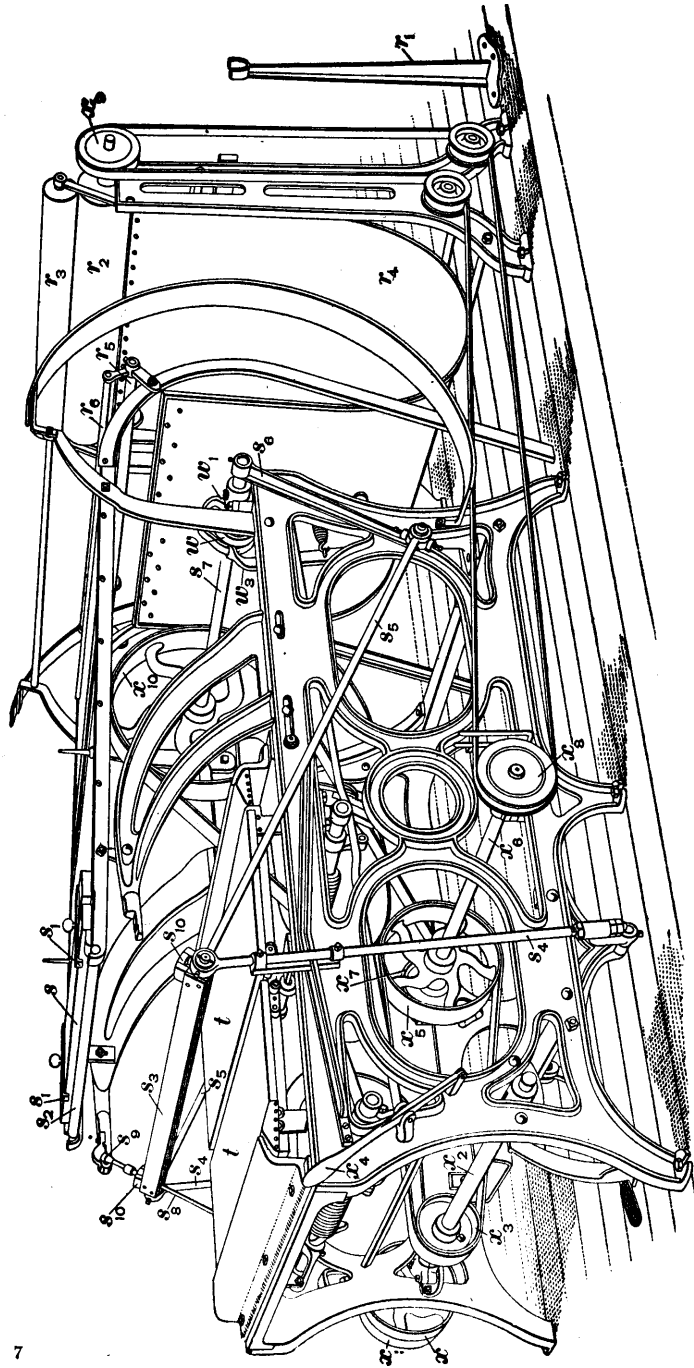


FIG. 3

the machine connected to a crank-arm s_4 that is fast to a shaft s_7 . The position of the folding blades relative to the gripping jaws t_1, t_2 is controlled by a rod s_8 , the upper end of which is held in a swivel-joint s_9 , while its lower end projects and slides through a self-oiling bearing that is on the end of one of the end pieces s_{10} of the folding blades. As the folding blades are moved back and forth over the table t , they consequently assume the position shown by the full lines in Fig. 4 when at the back of the table and the position shown by the dotted lines when approaching the front of the table, the faces of the two blades being always at right angles to the swivel rod s_8 . Fig. 5 shows the blades occupying the extreme backward position and placing the cloth under the jaw t_2 .

6. In order to hold the cloth firmly in position as it is folded, the table t (see Fig. 5) is pressed against the jaws t_1, t_2 ; but in order to allow the folding blades to place each fold of cloth between the jaws and the table, an arrangement is provided to drop, alternately, the latter slightly at each end as the folding blades are placing the cloth between that end and its respective jaw. This table consists of two separate leaves hinged at the center, each leaf acting independently of the other as regards its holding the cloth against its respective jaw. In Fig. 4, the leaves of the table t are shown lowered so as not to be in contact with the jaws t_1, t_2 , as will be explained later. The forward end of the table is supported by an arm t_3 , Fig. 5, that is connected to a casting t_4 setscrewed to a shaft y . Forming a part of the casting t_4 is a ratchet t , that is protected, with the exception of a few teeth at its lower edge, by means of a shield t_5 . Pressed against the shield by means of a spring not shown in the illustration is a pawl u attached to an elbow lever formed by the arms u_1, u_2 . This lever is loose on the shaft y and is controlled by a rod u_3 attached to a lever w , that is in contact with the face of the cam w . A spring v that is on the shaft y has one end attached to a casting v_1 , loose on the shaft, while its other end is attached to a casting v_2 , setscrewed to the

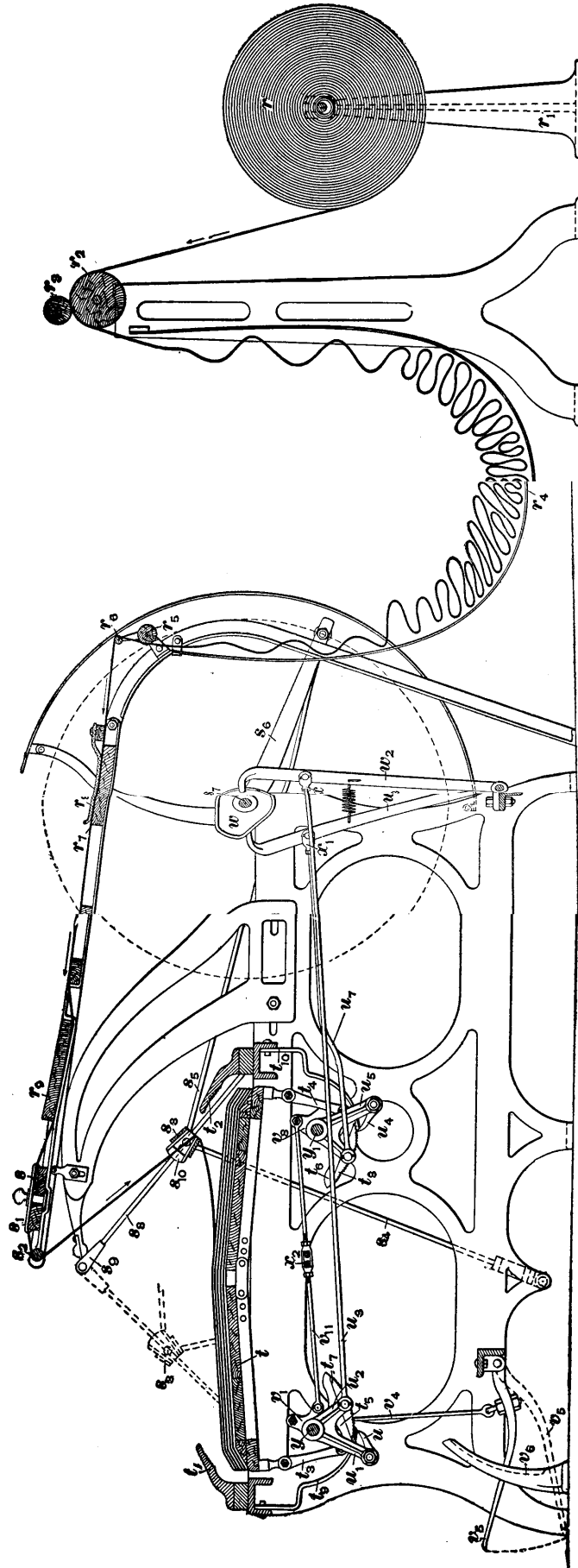


Fig 1

I.L.T. 9 500 B

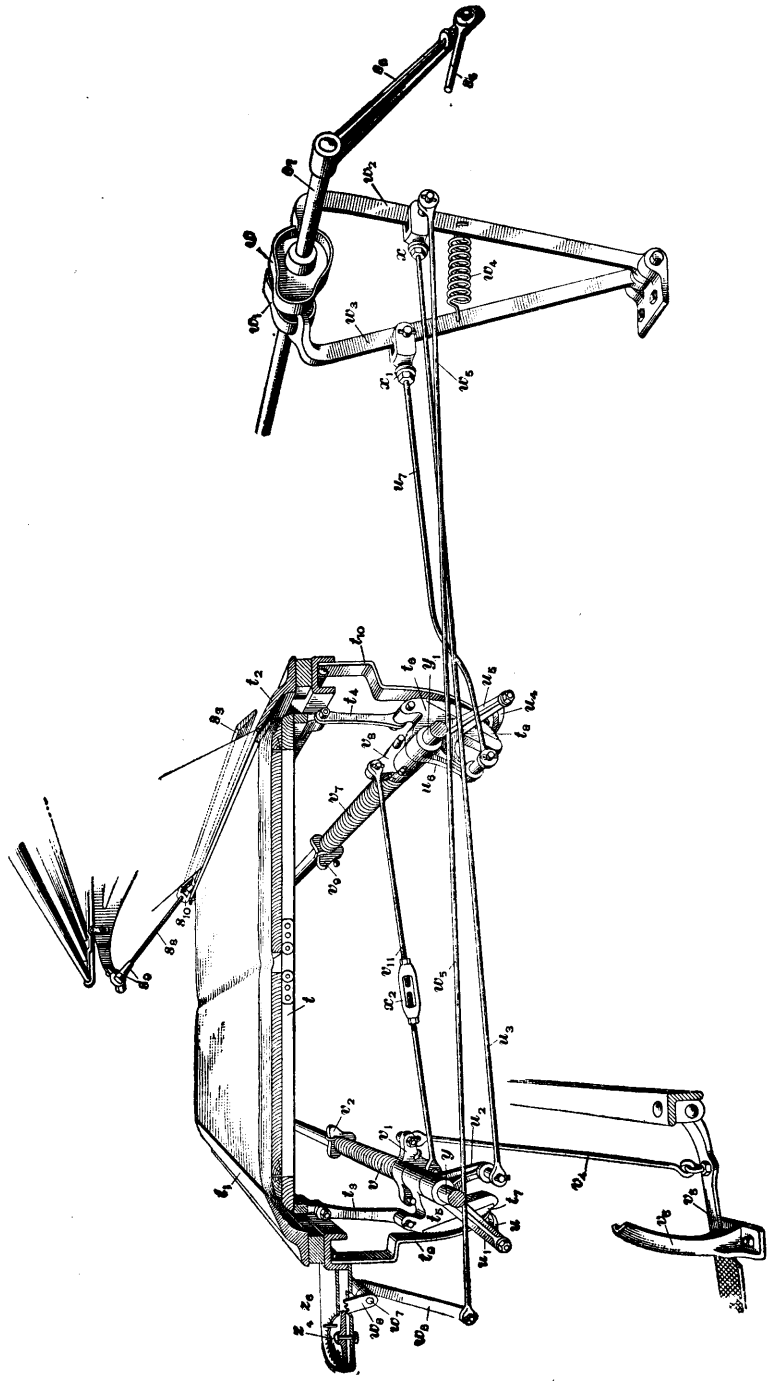


FIG. 5

shaft. These parts are duplicated at the rear end of the table. The casting v_1 is controlled by a rod v_2 attached to a foot-lever v_3 .

The operation of these parts is as follows: In order to place the table t in position for operating the machine, the folding blades s_1 are first brought over the center of the table and the foot-lever v_3 pressed down until it is held by a catch in the casting v_2 . Pressing down on the lever v_3 draws down the rod v_2 , together with one end of the casting v_1 , which compresses the spring v_4 and turns the casting v_1 . Since the casting v_1 is setscrewed to the shaft y , any motion of the former will be imparted to the latter and, in turn, to the casting t_1 , which is also setscrewed to the shaft; consequently, as the foot-lever v_3 is pressed down, the casting t_1 will be moved up, which will push the forward end of the table t against the jaw t_1 . A similar arrangement operates the rear of the table, the motion of the casting v_1 being imparted to a similar casting v_2 through the rod v_{11} , which results in the casting t_2 being moved up and pushing the rear end of the table against the jaw t_2 . When the folding blades are in the center of the table both the pawls u_1, u_2 are up on their shields, thus permitting the table to be raised; if the pawls were in contact with their ratchets, the castings t_1, t_2 and, consequently, the table could not be raised. The shields t_3, t_4 are so adjusted as to allow their respective pawls u_1, u_2 to engage just the required number of teeth in the ratchets t_1, t_2 as will operate the leaves of the table so that they will lower sufficiently to allow the cloth to be passed under the jaws t_1, t_2 .

The cam w is so set on the shaft s , that when the folding blades s_1 are at the forward end of the table, that part of the cam farthest from its center will be in contact with the lever w_1 , thus forcing it to the rear. This action draws the rod u_1 to the rear, together with the pawl u_1 , which will engage with the ratchet t_1 and force down the casting t_1 , thus dropping the forward end of the table t away from the jaw t_1 and allowing the folding blades s_1 to insert the cloth between these two parts. When the folding blades are

removed from the opening formed between the front of the table t and the jaw t_1 , the cam w on the shaft s , revolves sufficiently so that the lever w_1 , together with the rod u_1 , return to their normal positions. This action allows the spring v , which has been placed under additional tension by the downward motion of the casting t_1 , to be released slightly, thus turning the shaft y and raising the forward end of the table t into contact with the jaw t_1 , so as to hold the cloth firmly in position. As the rod u_1 is moved to the front, the pawl u slides up on the shield t_1 , thus leaving the ratchet t_1 and casting t_1 under the control of the spring v . The pawl is thus in position to operate the ratchet t_1 , as the cam w continues to revolve and the folding blades move forwards again to place the cloth under the jaw t_1 .

A similar connection is made to the rear end of the table by means of the arm t_2 that is connected to the casting t_2 ; this casting is setscrewed to the shaft y_1 , which carries a spring v_1 . The elbow lever u_1, u_2 that controls the pawl u_1 is operated by a rod u_2 , attached to the lever w_1 , that is in contact with the cam w_1 on the shaft s_1 . The springs v_1, v_2 , through their respective connecting-rods tend to keep the levers w_1, w_2 in contact with their respective cams, but in addition a supplementary spring w_3 is provided. When sufficient cloth has been folded and it is desired to remove it from the table t , the foot-lever v_3 is raised to the position shown by the full lines in Fig. 4. This allows the springs v_1, v_2 , Fig. 5, to turn the pieces v_1, v_2 in such a direction that the pins shown in these pieces hold down the castings t_1, t_2 , thus holding both ends of the table away from the jaws t_1, t_2 and allowing the folded cut to be readily removed.

7. The driving of this machine is shown in Fig. 3. The shaft x_1 carries tight and loose pulleys x_1, x_2 that are driven by a belt controlled by the shipper handle x_3 . The shaft x_1 also carries a pulley x_4 that drives, by means of a belt, a pulley x_5 on the shaft x_2 , which also carries a pulley x_6 . The pulley x_4 drives the pulley x_5 on the end of the roll r_1 , which drives the roll r_2 by friction. Another pulley x_7

is setscrewed to the shaft x_6 , behind the pulley x_5 ; by means of a belt, the pulley x_7 drives the pulley x_6 on the shaft s , that carries the cams w, w_1 .

8. In some cases, other types of tables are used that differ somewhat from the one previously described. One of these types is known as the *automatic drop-center table*, while another is known as the *solid, or one-piece, table*. The automatic drop-center table resembles very closely in general construction the table described in connection with Figs. 3, 4, and 5, but the table is so arranged that its center lowers proportionately with the ends as the pile of cloth gradually increases. This type of table is used for a large variety of fabrics and is especially adapted for extra-heavy or coarse goods; it produces folds of even length, an object that is difficult of attainment in the case of heavy goods or when long lengths of cloth are folded.

The solid, or one-piece, table, although not hinged in the center, is operated in a manner similar to the others as regards the lowering of its ends for the insertion of the cloth under the gripping jaws, and is used principally for silks or extra-fine goods.

9. The folder described is equipped with a low back frame and apron, while another type, which is similar as far as the actual machine is concerned, is equipped with a high front frame. The first type is used principally for unfinished goods, although in some cases it is used for finished goods. The second type is used largely for bleached, filled, or starched goods, prints, gingham, and other finished goods.

The high front frame does not require the use of the zinc apron and the stands at the back of the folder, thus differing from the machine previously described. In this case, a frame supporting rolls similar to r_2, r_3 , Fig. 3, is placed in front of the folder so that sufficient space is left for the operator. The cloth passes from the cloth roll, which is supported by small stands, between rolls similar to r_2, r_3 , and then down around a drop roll, up over another roll, over suitable guides to a roll similar to s , and thence to the folding

blades of the machine. The drop-roll arrangement takes the place of the apron of the first type.

10. Measuring Motion.—In many mills, it is the custom for the operator of the cloth folder to count the folds laid on the table, when the machine does not run too fast for this to be done. He thus ascertains the length of each cut. In other mills, measuring motions are used, which indicate on a dial the number of folds or yards of cloth in each cut. A common type of measuring motion is shown at the front of the machine in Fig. 5 and in detail in Fig. 6.

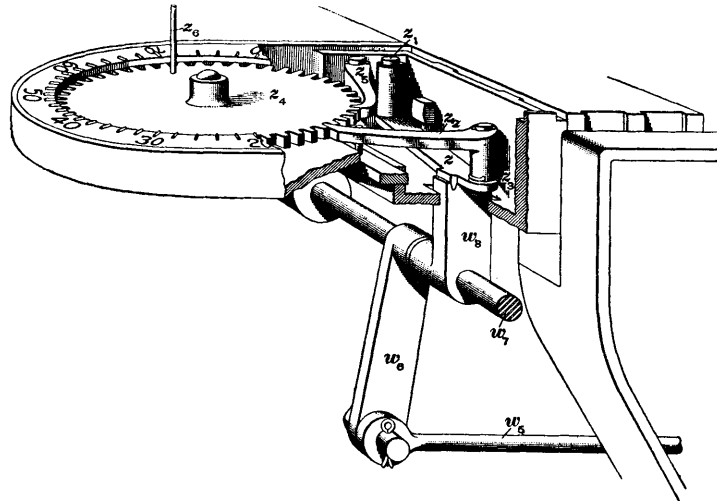


FIG. 6

Attached to the lever w_2 , which is actuated by the cam w , is a rod w_4 that is connected at the front end to the bottom of an arm w_3 , attached to the shaft w_7 . The cam w is so set that each time the folding blades approach the front of the machine, this cam presses the upper part of the lever w_2 backwards, thus drawing the lower end of the arm w_3 backwards. As the shaft s , continues to revolve, the lever w_2 is drawn forwards by the spring w_6 , and the lower end of the arm w_3 pushed forwards. Thus, the arm w_3 makes a forward or backward movement each time that one layer

of cloth is placed on the table, and imparts a reciprocating motion to the vertical arm w , which is attached to the shaft w . A horizontal arm z mounted on a stud z , carries at its opposite end a pawl z , also mounted on a stud. The upper end of the arm w , is connected to the under side of the arm z by means of teeth and gives an oscillating motion to the end of z that carries the pawl z . A spiral spring z , serves to keep the pawl constantly pressed against the teeth of a ratchet gear z , the various parts being so proportioned as to cause the movement of one tooth to be imparted to this ratchet each time that the folder blades make their forward movement. While the folder blades are moving backwards, the pawl z , is being drawn backwards to mesh with the next tooth on the ratchet, a second pawl z , holding the ratchet in place until z , assumes the new position.

The cover of the measuring motion is so constructed as to form a circular plate, or dial, which is divided into fifty spaces to correspond with the number of teeth on the ratchet. These spaces, each of which counts two, are numbered from 10 to 100, and as the ratchet carries a pin z , the number of folds is thereby indicated. For example, if the ratchet is set so that the pin stands against 100, which is really 0, on the cover and the folding blades make twenty-five backward and twenty-five forward movements, the ratchet will have revolved a distance equal to twenty-five teeth, while the pin will have been carried opposite the point marked 50 on the cover, indicating that fifty folds have been made. In case the folding machine is so constructed and set that each fold consists of 1 yard, the length of cloth folded will be 50 yards.

11. The usual length of each fold of cloth is 1 yard, but folders may be constructed to make folds of $1\frac{1}{4}$ yards, of $1\frac{1}{2}$ yards, or of 1 meter. This generally requires a different machine, although some machines are so constructed that they may be adjusted to give different lengths; for example, from 1 yard to $1\frac{1}{4}$ yards or from $1\frac{1}{4}$ yards to $1\frac{1}{2}$ yards.

In the case of a 1-yard fold the exact length given by the mill varies from $35\frac{1}{2}$ to $36\frac{1}{2}$ inches, according to the policy of the management. In cloth rooms where the fabric is under tension during almost its entire treatment, as, for instance, where it is sewed and rolled, sheared, brushed, and rolled again, it is slightly stretched, and after being folded in loose cuts tends to contract. In such cases, it is often folded slightly more than 36 inches for each so-called yard, and thus controversies with purchasers are avoided.

12. Little need be said concerning the operation and care of a cloth folder, since all parts are readily accessible and easily set. The stands at the back of the machine in which the roll of cloth rests should be so placed as to bring the roll in the center of, and perfectly parallel with, the machine, so as to prevent the cloth passing to the rolls at an angle. Care should be taken to have sufficient cloth in the apron r_4 , Fig. 4, so that the folding blades will take the cloth from it and not from the rolls r_2, r_3 . If the cloth slips between the rolls r_2, r_3 and they do not therefore deliver the cloth fast enough to keep sufficient cloth in the apron, a weight can be attached to each end of the roll r_2 , which increases the friction between the two rolls and prevents this slippage. If the two rolls take in too much cloth for the folder to take care of, the speed of r_2 should be reduced by changing the drive.

The friction placed on the cloth by the bag r_5 and friction board r_6 should also be carefully watched, in order to prevent the cloth being too tight between the roll s_1 and folding blades s_2 . If the friction on the cloth is too great, it will be drawn very tight between the folding blades and the roll s_1 , Fig. 4, which will sometimes cause the folding blades to pull the cloth out from under the jaws t_1 or t_2 when folding; or perhaps the fold may not be pulled completely out of the jaw, but may be started sufficiently to make the length of the folds uneven. If, on the other hand, there is too little friction on the cloth, it will be very loose and will flap considerably in being folded. This will often result in the cloth

sliding ahead of the blades when they stop under the jaws t_1 or t_2 , which will also have the effect of making the length of the folds uneven. The friction can be adjusted by increasing or decreasing the pressure of the friction bag on the cloth. The friction can be increased by folding a piece of cloth of the required weight so that it can be inserted in the friction bag, which is practically a flattened tube of cloth so supported that its under surface comes in contact with the cloth as it passes over the board r , Fig. 4. The lower edges of the folding blades should always be kept perfectly clean, especially when heavily sized goods are being folded, in which case the folding blades are very liable to become dirty and sticky, and the cloth clinging to them will result in the folds being dragged back.

The length of the fold that is being made by the folding blades should be measured frequently, in order to make sure that it is correct. If the cranks that impart motion to the folding blades need adjusting, this may be done by means of nuts and setscrews on the crankpins. Care, however, should always be taken that the cranks on both sides of the machine are set exactly the same length.

13. Care should also be taken to see that the **bushings** at the ends of the folder blades are not too loose, and if it is found that this is the case, the play can be taken **up** by means of setscrews provided for that purpose. Sometimes it will be found that the pawls u, u_1 , Figs. 4 and 5, have become so worn by use that they will not properly engage the teeth of the ratchets t, t_1 . In this case the points of the pawls may be sharpened so that they will properly engage with the teeth of the ratchets, or if the pawls are greatly worn, new ones may be put on. When the teeth of the ratchets become worn or broken, it is usually inadvisable to attempt to repair them by filing or other means; it is far better to put in new ratchets. The folder blades should be so adjusted that there is the same distance between the bottom folder blade and the under side of the jaws t_1, t_2 when the **folder** blades are in their forward and in their backward

positions. When the folder blades are at the limit of their movements in either direction, the edge of the jaw t_1 or t_2 , as the case may be, should be in line with, or perhaps a little back of, the top edge of the folder blades.

The rods u_3, u_7 , Fig. 5, should be so adjusted that the front and rear ends of the table are lowered at the proper time. This is accomplished by the adjustments at x, x_1 provided for this purpose. These rods, together with the cams w, w_1 , should be so adjusted that the table closes immediately on the withdrawal of the blades from under the jaws. The casting v_1 is connected to the casting v_2 by the connecting-rod v_{11} , which is provided with a turnbuckle x_2 , so that both ends of the table can be made to act in harmony by turning the turnbuckle to the proper position.

In case the cloth is pulled out from beneath the jaws t_1, t_2 , when the machine is in operation, if there is not too much friction on the cloth it is probable that the springs v, v_1 , Fig. 5, need tightening. These springs, however, should not be tightened so that the pressure of the table on the jaws t_1, t_2 is any greater than is absolutely necessary. Usually the pressure of these springs can be tested by pushing down on the cloth table, and it will generally be found that a fairly strong pressure with the hands is necessary to force the table down against their tension. If lint collects on the ends of the table after the machine has been operated for some time, the table should be carefully cleaned; and it may be that the duck covering at the ends of the table is worn smooth and thin, in which case a new covering of duck or other heavy cloth should be placed on them. The slipping or improper gripping of the cloth at the jaws is also caused by the beveled portions of the ends of the table being warped or worn excessively. This can be tested by inserting a piece of paper at intervals throughout the entire length of the jaws; the paper should be gripped between the jaws and the ends of the table. These last two faults are the most common.

The speed of a cloth folder is spoken of as so many yards per minute; that is, while the machine is actually running it is folding that number of yards per minute. The total

number of working minutes per day, however, could not be multiplied by the yards per minute in order to obtain the production of the machine, since a large portion of the operator's time is consumed in separating and removing the cuts as they are folded.

14. Cloth folders that fold the cloth in folds 1 yard long are constructed with the tight and loose pulleys x, x_1 , Fig. 3, 10 inches in diameter, and when running 250 revolutions per minute will fold 75 yards of cloth a minute, which is a fair average speed for folding ordinary fabrics. A machine of this description occupies a floor space of about $5\frac{1}{2}$ feet by 10 feet. Cloth folders that are so constructed as to fold the cloth in folds $1\frac{1}{4}$ yards in length also have driving pulleys 10 inches in diameter that, when running 200 revolutions per minute, will cause the machine to fold 75 yards of cloth per minute. On some fabrics a cloth folder, if operated by a skilled operator, may be run at a faster speed than that given above, but on the other hand it will be found that where goods are very wide or are very light and delicate, the speed of the machine should be correspondingly reduced. In setting up a cloth folder it is very important that the machine should be set perfectly level. This may be ascertained by placing a level on the front girt of the machine and also on the cam-shaft s , Fig. 3.

The cloth, as it comes from the shearing-and-brushing machines and is carried to the folder, is in the form of a large roll, containing a number of cuts stitched together. However, as the cloth is folded at the front of this last machine, the operator watches closely as it passes through, and as each cut is folded, detaches it from the rest of the cloth. Thus, there will be only a cut of about 50 yards in each separate piece of cloth that is taken from the folder. In some mills it is the custom to leave the cloth in double cuts, each separate piece in this case being about 100 yards in length.

MEASURING ATTACHMENTS

15. Cotton cloth when intended for shipment in bales of either single or double cuts is usually measured at the cloth folder, as already described; but when it is to be shipped in a roll, it is usually measured at the rolling head of the last machine through which it passes before being ready for shipment, or at the calender-rolling attachment, if it passes through this process. It is possible, however, to apply measuring rolls and dials to almost any machine through which the cloth passes, as these are constructed in various sizes and styles, with suitable brackets for attaching them, either to the sides or tops of machine frames or to horizontal rails or upright posts.

The usual arrangement consists of a worm on the end of the measuring roll, driving a dial gear, the length run being indicated by a pointer, or finger. When cloth is handled in short lengths, a single dial is used, to register up to 60, 75, or 100 yards. For large rolls, double dials are used to register a maximum of either 2,600 or 5,100 yards, while for recording very much greater lengths, such as the total amount of cloth passed through a machine in a week, counters that will register up to 100,000 yards are applied. The gearing between the measuring roll and the finger on the dial is selected so that as a point on the circumference of the measuring roll travels 36 inches, the finger moves over a space indicating 1 yard on the dial.

STAMPING

16. **Stamping** is the operation of impressing on the outside of a cut of cloth a combination of marks to give information as to the name of the mill where the goods was woven, the name of the cloth, the weight and length of the cut, and frequently a trade mark, etc. The imprint is usually arranged so as to be long and narrow—not more than 15 inches in width and from 20 inches upwards in length, according to the style of the design and the information to

be given. It is usually stamped on one-half of the outside fold of the cut; that is, the cut of cloth after leaving the folding machine in 36-inch folds is doubled once so as to reduce the width to 18 inches, and the imprint stamped on one of these halves. In some cases, more particularly where a 45-inch fold is used, one-third of the width is turned inwards on each side, thus reducing the width of the fold to 15 inches, and the impression is then made on the central portion, at the back of the cut. Usually blue ink is used to make the impression, but black, red, and other colors are sometimes used.

The stamps by which the impressions are made consist, in some cases, of wooden blocks with the design or letters that are to be imprinted cut in relief. More commonly, however, they consist of smooth blocks of hardwood into which have been driven the letters or portions of the design previously formed out of strips of copper, the edge of the strip forming the outline of the design desired. The portion of the stamp that indicates the number of yards is usually separate from the remainder, as the length of the cuts is not always the same, thus necessitating a separate series of stamps, the proper ones being selected for each piece. The remainder of the imprint may be in one or more pieces, preferably in two or three; for instance, the name of the mill on one, the trade mark on another, and the weight per yard on a third.

Stamping is performed either by hand, in the case of a small mill, or by machine, in the case of a large mill. A stamping machine operated by power will stamp the product of three thousand looms and is somewhat expensive; consequently, it is not usually introduced in mills with less than five hundred looms running on goods that have to be stamped.

17. The **inking arrangement** is somewhat similar whether for hand or power; it consists of a copper box either filled with water and having a rubber covering or containing a rubber pad filled with water. This is for the purpose of providing a surface that yields to the slight inequalities in the surface of the stamp and affords a means of equalizing

the supply of ink. The surface of the rubber is covered with soft cloth or flannel in the case of hand stamping, to which the ink is applied by means of a brush. In the case of machine stamping, the pad is covered by an endless apron, which travels over the surface of the pad and conveys the supply of ink. When goods are stamped by hand, the impression is made just as with an ordinary rubber stamp for making an impression on paper, namely, by first pressing the stamp on the inked surface and then on the cloth, this being continued with different stamps until the design desired is impressed.

18. Stamping Machines.—The machine for stamping consists of a substantial framework to support the various mechanisms required. Vertical rods that slide in suitable guides carry a cross-bar to which are attached as many stamps as are required to complete the design, the arrangement being such that the cross-bar may be adjusted at either end to give a uniform impression. The rods supporting this arrangement are actuated by cams, which raise and lower the cross-bar, and when the latter is dropped into position, another cam produces the desired pressure to make the imprint. A sliding table moves forwards to receive the piece of cloth to be stamped, which is laid on the table in any desired position, determined by adjustable sides; the table then travels backwards until it is in position under the stamps and remains there a sufficient length of time to allow the impression to be made and the stamps to be returned. The table then moves forwards again to admit of the removal of this piece of cloth and the insertion of another piece, during which interval the stamps have again moved downwards, but this time into contact with the stamp pad, so as to receive another supply of ink in readiness for stamping the next piece of cloth.

Stamping machines carry tight and loose driving pulleys 18 inches in diameter and $2\frac{1}{4}$ inches wide, revolving at a speed of about 40 revolutions per minute. The space occupied by such a machine is about 6 feet \times 5 feet.

If all the cuts are exactly equal in length, which seldom occurs, the mark to indicate the number of yards in the cut can be impressed at the same time as the other parts of the design; but it is more common to stamp these afterwards by hand, since there is usually a slight variation in the length of the different cuts, so that it may be necessary to stamp one length as 49 yards, the next as $49\frac{1}{2}$, a third as 48, a fourth as 50, etc.

PREPARATION FOR SHIPMENT

BALING

19. To prepare cloth for shipment it is either baled or cased, usually the former. Baling differs according to whether the goods are intended for domestic or foreign shipment, being much more carefully performed in the latter case. When cloth is to be shipped from the mill to the bleacher, converter, or the domestic consumer, a number of cuts (varying according to their length and weight and the size of bale desired) are taken from the compartment in which they are stored in the cloth room, the number of yards and weight of each cut being entered in a book or on a sheet of paper. Each cut is folded one or more times, to reduce its width to the desired size, when it is ready for baling.

20. Baling Presses.—Three types of baling presses are used for cloth intended for domestic shipment—the **togglejoint press**, the **screw press**, and the **hydraulic press**. Screw presses are not now usually adopted, owing to their slow action, and hydraulic presses are expensive and usually too powerful for domestic baling; the togglejoint press is therefore most commonly installed in cotton cloth rooms for this purpose. Fig. 7 is a perspective view of a togglejoint press. The framework of the press is composed of the bed *b*, on the upper surface *a* of which the bale is formed, and the head *c*, both of which may be made of either cast iron or wood. The upright rods, or columns, *d*

are usually made of steel and serve to connect the bed *b* with the head *c*. Running horizontally across the machine below the head and between the columns is the screw *e*, which imparts motion to the working arms *f*, *f*₁, *f*₂, *f*₃. This screw has a right- and left-hand thread and carries two

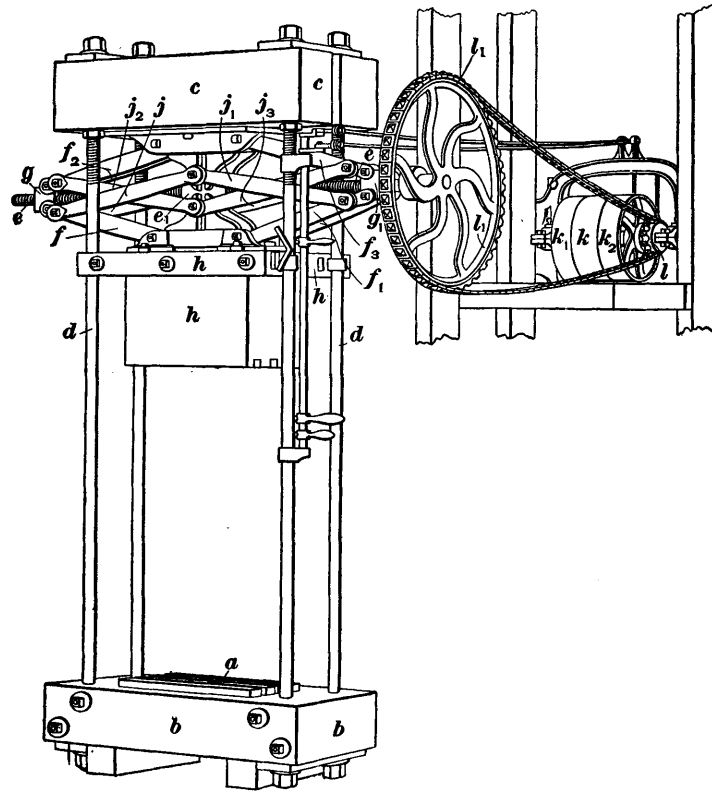


FIG. 7

nuts *g*, *g*₁. The arms *f*, *f*₁ are pivoted at one end to the nut *g*, while their other ends are connected, respectively, to the follower *h* and to a bracket attached to the head. The arms *f*₂, *f*₃ are similarly connected on the other side of the head. By this means, when the screw *e* is turned in one direction, it will draw the nuts toward the center of the

screw, straighten out the working arms, and force down the follower *h*. When the screw is turned in the opposite direction, it will draw the nuts out, cause the arms to fold up, and thus raise the follower. The arms *j, j₁, j₂, j₃* serve merely to steady the working parts. The bed and follower are constructed with recesses through which cords may be passed while the cloth is under pressure, and secured before the pressure is released.

An automatic power attachment is used in connection with the press and consists of a bracket and short shaft containing three pulleys—*k*, which is attached to the shaft, and *k₁, k₂*, which are loose on the shaft. The bracket also carries two rods, with belt shippers, springs, and lever attachments for shipping the belts from one pulley to another. One loose pulley is driven by a crossed belt, while the other is driven by an open one and consequently revolves in the opposite direction. On the shaft with the pulleys is a small sprocket gear *l*, which drives, by means of a chain, a large sprocket gear *l₁* on the same shaft as the screw *e*. In operation, one belt is first shipped to the tight pulley, which turns the screw in such a direction that the follower is forced downwards until the cloth has been compressed sufficiently, when the belt is automatically shipped to its loose pulley. After the bale has been secured with ropes or bands the other belt is shipped from its loose pulley to the tight pulley, which reverses the screw and raises the follower.

21. Before forming the bale of cloth, the required number of pieces of rope (if rope is to be used) of sufficient length to pass around the entire bale are placed in position in the grooves in the bed; it is becoming the practice now to use, instead of rope, steel bands cut to suitable lengths and secured by buckles. The method of passing these around the bale, however, is much the same in either case. After the ropes or bands have been properly placed in the grooves, a piece of burlap of sufficient size to cover the lower side of the bale and half of the surrounding four sides is placed in position on the top of the bed. The required number of

cuts of cloth are then placed on this burlap and covered with another piece of burlap similar to the first, after which the follower is allowed to descend and subject the cloth to the necessary pressure to produce a bale of the required size. The burlap is then drawn up from the bottom and down from the top so as to overlap and the edges are sewed together. The ropes or bands are next secured around the bale and the follower allowed to rise, after which the bale is removed and marked with the necessary shipping instructions and description of its contents, such as style, number, length, or other particulars. This marking is generally done by means of a stencil. If the bales are usually shipped to the same destination and they are usually marked with certain standard markings, it is customary to have these stencils made of brass plate, the letters being cut out. In those mills where the addresses to which shipments are to be made are constantly changing, stencil machines are being introduced which prepare paper stencils in a very short time. After the bales are completed they are trucked to the storehouse and held for shipment.

22. It is not customary to completely enclose the bale of goods in burlap, especially if it is to be transported a short distance, in which case it is common to use only a small strip of burlap for the bottom and another for the top, leaving the sides partly exposed. This is not a good practice, since bales of cloth are carelessly handled in transportation, and the exposed cloth may come in contact with the bottom of a car that is dirty or that has been used for oil, acids, or some other substance that has a detrimental effect on the fabric, or at any rate soils the edges of the folds. Similarly, bales become marked with grime and dirt when laid on wharves. As a result, when the cuts are opened, streaks of grime or dirt will frequently be found running across the cloth where it has been folded or along the selvages. These marks are known to the converters as *bale marks* and are very objectionable, as it is impossible in many cases to remove them in bleaching.

It is customary at the same time that the cuts are piled up in the press to make a record of the contents of the bale; that is, the style of the cloth, the number of cuts in the bale, the number of yards in each piece, the weight of each piece, the total number of yards, the total weight of cloth, and the average weight per yard, thus affording a means of ascertaining whether the cloth is being manufactured according to the weight per yard ordered.

23. Foreign Shipment.—When goods are to be shipped abroad, especially for long distances by ocean transit, the style of baling is somewhat different and much more completely and carefully performed. Bales for ocean shipment are pressed more closely than for domestic shipment, since ocean rates depend on the space occupied. The covering of the bales must be more elaborate, in order to resist moisture. Hydraulic presses are almost always used for baling cloth for ocean shipment, on account of the greater pressure that can be obtained. The bales are also much heavier than domestic ones, from 100 to 200 cuts being sometimes baled together; but this depends on the instructions of the foreign buyer, since in some cases small bales are made, to facilitate transportation to the interior of foreign countries.

The methods of covering foreign bales vary according to requirements, but one example will serve to illustrate all. On the bottom platform of the press a piece of burlap or coarse linen canvas is laid, and on the top of this, tarred cloth, which is canvas covered with pitch to make it waterproof. Above this, one or more layers of heavy gray or brown absorbent paper are laid, so as to prevent the pitch striking through to the cloth, and on this, thick white paper is placed. The cloth is then piled up to the required height and on the top paper and cloth are laid in reverse order, namely, white paper next to the fabric, then gray or brown absorbent paper, then the waterproof tarred cloth, and above it the outside covering of burlap. Sometimes additional sheets of oiled linen cloth are placed next the outer layer of paper, with still another layer of absorbent paper next the white

paper. The lower platform of the press is raised by hydraulic power and the ends of all the layers folded so that they will overlap and yet remain in their respective relative positions to the cloth. The outer coverings are sewed up at the sides and ends, after which four or more steel bands, usually painted to prevent corrosion, are secured around the bale and fastened by rivets, after which the pressure is released, the bale removed, and the necessary shipping marks placed on with stencils, together with the customary injunction, "Use no hooks."

SHIPMENT IN ROLLS OR CASES

24. It is becoming more and more customary to ship ordinary cotton cloth from the mill to the converter in rolls, just as it leaves the shearing-and-brushing machine, or, where it is not required to be sheared and brushed, as it leaves the sewing-and-rolling machine; that is, after the wooden roll on which the cloth is wound at these machines is removed. In this case a piece of burlap is placed around the roll and sewed where the ends overlap. The roll is then placed on its end and a small piece of burlap tucked in the upper end and sewed around the end of the roll along the edge of the selvage of the piece of burlap previously placed around the roll of cloth. The roll is then stood on this end and the opposite end covered in the same way, thus completely enclosing the cloth.

25. Another method of shipment is to pack the cuts of cloth in cases. This is common for gingham and those fabrics that leave the mill in the condition in which they are forwarded to the dry-goods commission houses, ready for the dry-goods store. The cases are constructed to hold the required number of bolts of cloth and are lined with paper. After the cuts have been packed in the case, they are pressed down and the cover nailed on; the cases are then stenciled with the required shipping instructions, after which they are removed to the storehouse to await shipment.

CLOTH INSPECTION

26. The proper inspection of cotton cloth is one of the most important matters in connection with the operation of a cloth room. It is important to have every piece examined in order to detect faults and trace them to the weaver who has caused them or allowed them to pass. It is also a means of detecting faults in the cloth that cannot be attributed to the weaver, but to some other operative in the weaving department or in some other department; as, for example, wrong drafts in the drawing-in room, or unsuitably mixed cotton, or defective yarn produced in the spinning room. By the inspection of cloth the different cuts are also graded for shipment. Almost every mill divides the cuts into two grades—firsts and seconds—and some into three or more grades, depending on the strictness of the buyer's requirements or the reputation that the mill desires to maintain. In addition to the regular grades, the inspection also results in producing a certain number of remnants, or *mill ends*.

27. Among the principal faults to be watched for is that known as *ends out*, where the weaver has failed to replace a broken end or ends as soon as the breakage occurs. *Mis-picks* result when the loom, after having been stopped by the filling breaking or running out, has run for a pick or two before being entirely stopped and then the weaver in starting with fresh filling has allowed the first pick of the new filling to lie in the same shed as the last, thus giving two consecutive picks in the same shed; this trouble is accentuated in fancy or colored goods, where the additional defect of making a break in the pattern results. *Broken picks* result when a pick of filling breaks part way across the shed and is not removed so as to be replaced by a complete new pick. *Bad selvages* are due to various causes. *Smashes* are produced by the shuttle remaining in the shed and breaking out a portion of the warp yarn; these can be remedied, if not of serious proportions, by the weaver piecing up the warp and making a new start in such a way as to avoid evidence of there having

been a smash, although this is not always done. *Thin places* in the cloth may result from starting the loom improperly after a breakage in filling, or may be caused when the loom is running; *thick places* are also caused in a similar manner, there being too much filling in a given space in comparison with the remainder of the fabric. *Floats* occur where there has been an entanglement in the warp resulting in imperfect interweaving for a short distance filling-way and warp-way, thus producing a hole in the cloth or a thin place where it has been scratched over. Most of these defects are the fault of the weaver.

Slubs, or *slugs*, and *thick places* in the filling are due to defective yarn preparation, attributable to departments previous to the weaving department. An *insufficient* or an *excessive number of picks* per inch results when the wrong take-up gears are placed on the loom by the fixer or second hand; and many other defects of a similar nature occur that are not the fault of the weaver. The duty of the weaver-room overseer, in a small mill where he is also the cloth inspector, is to call the attention of the proper officials to these faults, that they may deal with them in such a manner as will prevent or reduce the frequency of their occurrence and may also decide whether the cloth shall be considered as first quality or as seconds.

In case a defective length of cloth must be entirely cut out, it is customary in most mills merely to lay the two remaining pieces together and mark the cloth with the combined length of the two pieces, thus, $25 + 20 = 45$. This forms a *blind end*, and if shipped to the converter in this condition, this defect will not be discovered until the cloth is being run through some machine at a rapid rate, which will cause much loss of time in threading the cloth through the machine again and frequently the spoiling of a number of yards by the defective treatment of that portion of the cloth. The converter prefers that the two cut ends should be sewed together so as to make one continuous cut. Whenever it is necessary to sew two ends of cloth together for this or any other reason, it should always be done by

machine and not by hand, since hand-sewed seams in the gray cloth almost always break when they are subjected to the strain that is applied in certain converting machinery, thus causing entanglement and spoiling a considerable length of the fabric. Similarly, when in a piece of cloth a place that has been allowed to pass through the loom without having filling inserted is discovered, the two woven portions merely being connected by warp ends, this should be cut out and the ends sewed together. Since the warp alone is not sufficient to stand the strain of the converting processes the cloth would be broken or, in case of singeing, the ends would be burnt away, thus causing a break.

28. The cloth-room inspector should be trained to consider the requirements of the converter as far as possible, in order to obtain for the mill a good reputation for delivering cloth that causes little trouble in bleaching, dyeing, or printing. For example, the inside end of a piece of cloth should be left flat when the folds are doubled over for shipment and not allowed to crumple, as is often customary, since this causes wrinkles for $\frac{1}{2}$ yard or more, which cannot easily be removed. The converters also appreciate a good selvage to a fabric, since defective selvages, by breaking, cause as much trouble as any other fault in cotton cloth, if not more. Many of the faults produced in weaving show up much worse after the cloth has been dyed or bleached.

The practice of placing pins or leaving needles in cloth should not be permitted; they should be looked for by the inspector and removed, as well as broken teeth of combs that have been used for scratching up defective places. Any such metallic substances damage the rolls of the converting machinery or adhere to their surfaces, thus producing a series of damaged places for a considerable distance.

No black lead (graphite) marks should be permitted, nor marks made by any material containing wax or grease, since such marks will not bleach out. Pure chalk crayons only should be used in any department for marking cotton goods, especially cloth that is to go to the converter.

29. The standard of quality for grading the cuts depends on the policy adopted by the mill and the requirements of the buyer, so that it is difficult to give any hard and fast rule for this. In general, it may be stated that where the requirements are fairly stringent and where cuts that contain any serious imperfections or any excessive number of minor imperfections are not classed as first quality, the number of seconds should not exceed 2 per cent. in a well-managed mill; it should be less than this for ordinary plain goods and not greatly in excess for fancy or colored goods. Some mills making both plain and fancy goods keep their seconds at less than $1\frac{1}{2}$ per cent. the year around.

30. Cloths may be inspected in the cloth room in three ways: (1) at the brushing-and-inspecting machine shown in Fig. 1; (2) by means of an inspecting machine of simpler construction, consisting of little more than a black slanting table over which the cloth is drawn by hand or by means of revolving rolls which can be readily stopped in case a defect is noticed; (3) fold by fold, after it has been removed from the cloth folder and laid on a flat table.

The most common and perhaps the most satisfactory system of inspection is the one last named. The piece of cloth as it is taken from the folder is doubled over on itself once and each fold turned over by hand, and any defects noted. After one side has been inspected, the piece is turned over end for end and the other half of each fold examined in the same way. This is a more expensive system than the first and second, but results in a more careful examination, and as the piece of cloth is stationary the minor defects can not only be observed but in some cases remedied. For a more careful inspection, the cloth is laid flat as it comes from the folder and an entire fold turned over each time. In the larger cloth rooms the inspection is usually performed by girls, who refer especially defective pieces to the superintendent of the cloth room for final inspection and action.

31. The appliances required in a cloth room are scissors, cloth nippers, weaver's combs, a block of wood, a cloth

rubber, water, soap, and oxalic acid. The scissors are for the purpose of cutting out defective lengths of cloth, separating the pieces of cloth into single cuts, and clipping off loose ends of yarn. The nippers, shown in Fig. 8 (b), are for the purpose of grasping slubs and lumps in the cloth that have not been otherwise removed, and drawing them out. The comb, Fig. 8 (a), consisting of a number of sharp teeth leaded into a brass back, is for the purpose of scratching adjoining ends of warp or picks of filling over a thin place

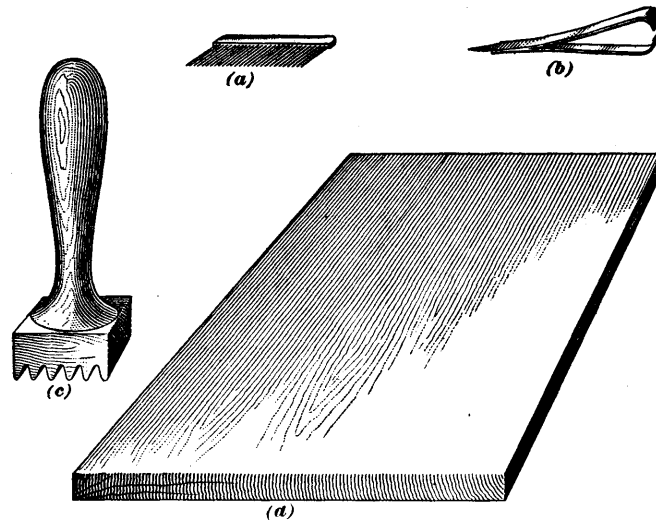


FIG. 8

or hole; as, for example, after a slub has been removed, the comb is used to draw over the open space preceding or succeeding picks of filling and remove any evidence of a flaw in the cloth. Small floats are scratched over in the same way. Spots or streaks of black oil are often found in cotton cloth, and if caused by a spot of oily lint, can sometimes be picked out with the nippers, but more frequently after doing so, or in case it is impossible to remove it with the nippers, the black place must be soaked in oxalic acid and rubbed until the black spot disappears, after which that portion of the

cloth must be carefully and thoroughly rinsed out with clear, cold water, so as to prevent the action of the acid continuing and *tendering* the fabric.

In some mills the use of oxalic acid for this purpose is prohibited, and oil stains are removed by means of soap and water. A good plan is to have a piece of whitewood board about 9 inches wide, 18 inches long, and $\frac{5}{8}$ inch thick, Fig. 8 (*d*), which is used bare or covered with several thicknesses of cloth and placed under the oily mark. A little water is then poured on the fabric and the spot rubbed with white soap of good quality. When it has become thoroughly saturated with soap and water, it is rubbed with a wooden cloth rubber, such as is shown in Fig. 8 (*c*), which is an implement having the upper part fashioned into a handle and the lower part corrugated, until the marks are effaced, after which the cloth is rinsed with clean water and wiped as dry as possible with a clean cloth.

SUMMARY

32. A summary of the combinations of machines and processes used in the cloth room is now appropriate. The treatment of fabrics in the cloth room and the number of processes used depends on: (1) the class of goods made by the mill; (2) the differences of opinion among mill men as to what is suitable treatment even for the same fabric; (3) the policy of the management, whether tending toward economy in cost at the expense of quality or the desire to produce the best quality irrespective of cost.

Inspection and folding or rolling are the only absolutely essential processes in the cotton cloth room. Some mills making standard goods, such as print cloths, where little advantage is to be gained by making a high quality and where the only thing to be noted in the cloth room is to prevent too low a quality, are content with passing the cloth directly from the loom through a folder, inspecting it afterwards by hand, and then baling the cloth for shipment. Where such fabrics are shipped in a roll, they are passed

through a sewing-and-rolling machine, inspected at the same time, and shipped in the roll; or sometimes after being sewed and rolled they are passed through an inspecting machine, rolled, and shipped.

The later processes of brushing, shearing, and calendering depend on the conditions named. Shearing is adopted only when it is desired to bring out the pattern strongly or produce a comparatively bright face on the fabric, and where shearing is adopted it is always combined with brushing. Shearing-and-brushing machines may be used for coarse, medium, or fine fabrics, the differences being in the adjustment of the shears and brushes, since a delicate fabric will, of course, not stand the same amount of shearing and brushing as a coarse or medium fabric. The number of shears and brushes, generally speaking, is determined by the cloth to be operated on; the larger numbers being used for heavy and coarse fabrics. In some cases a large number are used for fine fabrics, each being set to operate lightly.

Emery rolls, beaters, and card rolls are usually applied only to those machines intended for dealing with coarse or medium fabrics, especially such as duck, ticking, sheetings, twills, etc. Such heavy fabrics will withstand the pressure and strain brought on them by the emery rolls, the beaters, and the card rolls, being finally treated by stiff brushes and either calendered or not, according to the requirements of the mill or of the buyer. For such fabrics it is not common to use shears, since sheetings and similar goods are enhanced in value if they have a full, soft appearance and feel.

The removal of dust, dirt, and small particles of foreign matter is desirable for all fabrics, and consequently brushing combined with a strong exhaust fan for removing the dirt brushed off is common to the treatment of almost all fabrics. In general, therefore, it may be stated that coarse, heavy goods, where a bare surface is not desired, are treated by emery rolls, beaters, card brushes, stiff brushes, and are sometimes calendered. Coarse goods, where a full, soft face is not desired, are treated by shearing also. Medium

and fine goods, where a bare face is desired, are sheared and brushed, but not usually calendered, the extent of the shearing and brushing being determined by the number of shears and brushes in the machine and by the closeness or openness of the setting. Fine goods, of course, will not stand as close a setting as medium and coarse goods. Sewing machines are only used where the fabric is to be shipped in a roll, or where a number of cuts are to be sewed together to facilitate the passage of the cloth through the shearing, brushing, or calendering machines. Otherwise, the sewing-and-rolling machine has no part whatever in changing or improving the appearance of the fabric.

The absolutely necessary processes in a cloth room are merely those that change the form from that in which the cloth leaves the loom to that in which it is to be shipped, namely, the folding or baling, or in some cases rolling, and, where required, stamping or ticketing. All other processes are optional. In fine-goods mills, especially those making fancy goods, and where the cloth is to be immediately forwarded to the converter, it is not usual to adopt any machines except the folding and inspecting machines and baling presses. The pieces are not even sewed together, but each piece is inspected on a machine of simple construction, then folded, inspected, and afterwards baled.

CLOTH ROOMS

(PART 2)

EXAMINATION QUESTIONS

- (1) State several methods of inspecting cloth.
- (2) What are the objects of the trimming-and-inspecting machine?
- (3) (a) What types of presses are used for baling cloth intended for domestic shipment? (b) What type is most commonly used?
- (4) Name some of the principal faults to be noticed when inspecting cloth.
- (5) Explain how the table *t*, Fig. 5, is kept in contact with the jaws *t*₁, *t*₂ when it is not lowered positively by the cams.
- (6) Why is it not a good practice only partly to cover a bale of cloth with burlap?
- (7) Describe the passage of the cloth through the trimming-and-inspecting machine.
- (8) Referring to Fig. 5, explain how the cams depress the table *t*.
- (9) (a) What type of press is used for baling cloth for ocean shipment? (b) Why is this type used?
- (10) What is the object of stamping cloth?
- (11) State the object of the mechanism shown in Fig. 6 and also the number of teeth that the gear moves in registering 40 folds.

- (12) State how rolls of cloth are prepared for shipment.
- (13) In a folder, what would be the effect of: (a) too much tension on the cloth? (b) too little tension?
- (14) How is the table t , Fig. 5, lowered when a cut of cloth is to be removed from the folder?
- (15) If a folder operates at the rate of 70 yards per minute, how many hours will be required to fold 10,000 yards of cloth, making an allowance of 40 per cent. for stoppages, etc.?

Ans. 3.968 hr.