

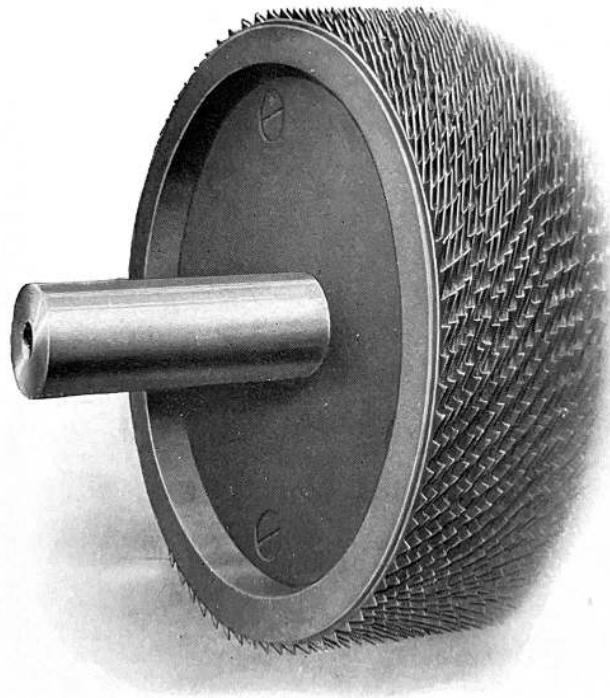
GARNETT WIRE



Its Uses and Application

P & C GARNETT LTD
CLECKHEATON ENGLAND

P. & C. GARNETT LIMITED
CLECKHEATON
ENGLAND



ROLLER COVERED WITH "GARNETT" WIRE

Redemption of Waste

HOW far we seem to be removed from our ancestors of ten thousand, a thousand, or even only two hundred years ago!

Indeed, the past two hundred years have marked a greater difference in the lives of civilized beings than separated those living in the earlier part of the eighteenth century from their forefathers, say, in the times of the earlier Cæsars! What accounts for such revolutionary changes? Surely the difference lies in mankind's greater capacity to control and adapt the powers and resources of nature to human needs. Nature possessed the same powers and resources ten thousand years ago as she does to-day. The difference is that powers and resources which to-day are being controlled, utilized and developed were then more or less dormant and latent. We do not know what powers and resources still remain dormant in nature. Perhaps at the dawn of the twenty-first century our posterity will regard our achievements with the same incredulous condescension as we are apt to bestow on those of ten thousand years ago. The next hundred years may witness advances in chemical and mechanical sciences which will make our achievements seem but the products of pigmies. What we regard as more or less waste matter doubtless contains potentialities which will admit of development into the most valuable wealth. The difference between the present age and that which saw the dawn of history is only the difference between wealth and waste. It has been said that he who makes two blades of grass grow where only one grew before is a philanthropist—a benefactor to mankind; and modern chemical and mechanical science but unfolds that beneficial principle on a marvellous scale. Scientific and industrial progress has contributed

ample illustrations of this principle—the expansion of production, the utilization of what had been dormant and latent in nature, the turning of Waste into Wealth.

The history of “GARNETT” WIRE is a splendid illustration of this achievement of turning Waste into Wealth. The use of “GARNETT” WIRE on Opening Machinery has enabled the people of the world to convert in valuable raw materials wastes which had previously only been used as wiping waste or thrown on to the fields as manure.



1850-1937

"GARNETT" WIRE

Its Uses

IT is now 87 years since "Garnett" Wire was introduced to the world—or rather to the Textile Industries of the world. Unlike many inventions, it was soon recognized as a success, for the late Mr. Peter Garnett, of Otley, the founder of our firm, had not much difficulty in proving its great value; and many of the shrewdest men in the Textile Trades had taker-in rollers of Cotton Carding Machines covered with it, whilst others ordered Opening Machines covered with this new wire clothing, on which they were able to card their wastes.

This Opening or Carding Machine became known as the "Garnett" Machine, not only in England, but in other countries of the world. In fact, the word "Garnett" is not only used as a pronoun, but as a noun, an adjective and a verb; for we hear and read both in England and America of a Garnett, to garnett, and also of garnetted waste and of a Garnetting Plant, and in France we often find the words "garnettage" and also of waste "garnettée", and "la machine Garnett".

From this it will be seen that the "Garnett" invention has not only greatly added to the material wealth of the world, but has also enriched its vocabularies.

"Garnett" Wire is sometimes described by other names, such as saw-tooth wire, taker-in wire, licker-in wire, metallic fillet, serrated wire, burr wire, but all these are only variations of the same thing and were all covered by the original patent, which was truly a "master" patent in every sense of the word.

In the original specification we find the following sentence: "The teeth are formed by punching and cutting out, at proper intervals along the wire, pieces of the same, so as to leave the teeth of the required shape for the production of the desired effects."

Along with the definition we find shown sketches of teeth of every imaginable form and shape which could be used for opening, cleaning and carding textile materials.

It was also set forth that "the wires can be wound on the rollers in spiral grooves cut in surface of same, or wound straight or spirally on the surface of rollers and secured by soldering or any other well-known method of fastening".

This new form of wire clothing supplied a long-felt want in the Textile Trades.

Up to the year 1850 there were two known forms of clothing for Opening Machines and Carding Machines, viz., wood lags set with steel pins and card clothing, which, of course, is made with wire teeth set in leather, cloth or rubber foundations. Both of these are excellent forms of clothing for particular purposes, but the "Garnett" Wires have advantages in certain directions which neither of the other two possess. It possesses the rigidity and almost the strength of the steel teeth set in wood lags, but it can be made with a much larger number of teeth per square inch, and is therefore capable of opening much finer materials or threads than can be dealt with by the wood lags.

On the other hand, on account of the wedge shape of the teeth, and to the fact that it is "all steel", it is much stronger and more rigid than any form of card clothing set in leather or cloth foundations. It is not possible to have as many "Garnett" teeth in a square inch as in the very finest types of card clothing, nor is it necessary to do so, since each "Garnett" tooth is efficient on its own. Pointed "Garnett" Wire clothings are usually made with up to 32 rows per inch, but flat-topped burr wires are made with 42 rows per inch.

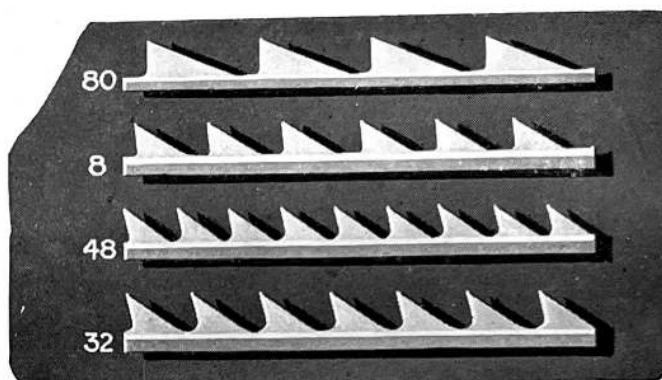
We do not claim that "Garnett" Wire can replace card clothing *for every purpose*, but it can certainly be very much more widely used than it is to-day. The old argument that it was so rigid that fibre breakage was bound to occur has been proved false. Not only is there no more fibre breakage than with fillet, but in many cases there is *less fibre breakage*. There is less waste in carding with "Garnett" Wire, and such waste as there is contains very little good fibre.

On the other hand, "Garnett" Wire is not to be recommended for carding materials containing very much vegetable matter (for example, seedy cotton), since the broken seeds do not stick in the clothing so much, but are carried forward in the sliver. Nor is it to be recommended for materials that contain a great deal of sticky oil or grease.

In addition to clothing the cylinders and doffers of Cotton, Worsted and Woollen Carding Machines, as mentioned above, "Garnett" Wire can be used with advantage for the following purposes.

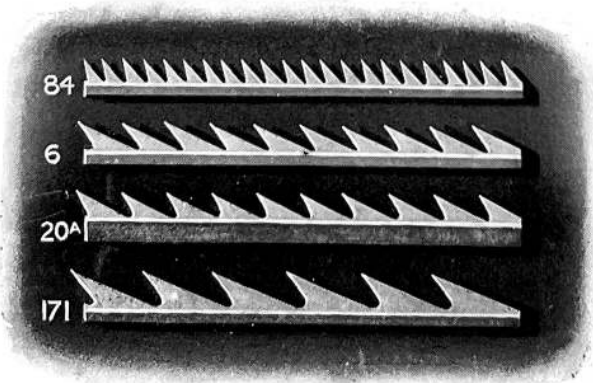
Cotton Taker-in Rollers

For the clothing of this roller, which takes the cotton on to the Cotton Carding Machines, "Garnett" Wire has proved to be a great success on account of its strength, durability and comparative cheapness. Owing to the form and rigidity of the teeth, it not only opens out the cotton well, but does a considerable amount of cleaning, for it throws out a large amount of seed and other impurities which it is desirable to get rid of. Practically all the leading makers of Cotton Carding Machinery in all parts of the world have adopted "Garnett" Wire as the standard clothing for taker-in rollers.



Waste Opening and Carding Machines

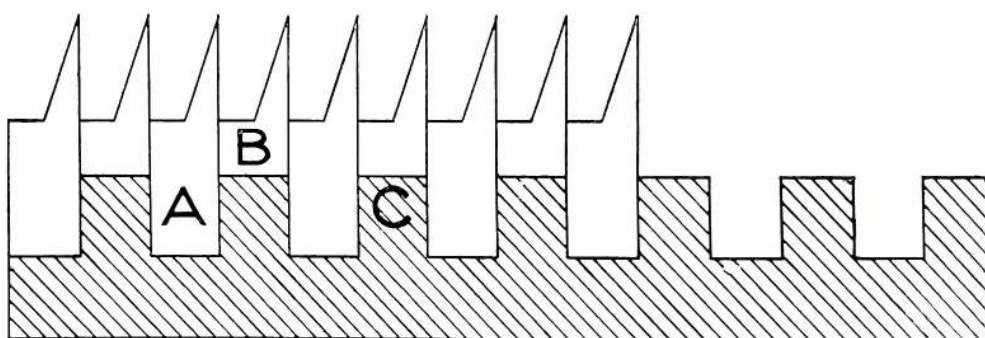
As we have previously stated on the first page of this book, "Garnett" Wire was applied to the rollers of a Waste Opening Machine, which is in point of fact a strong Carding Machine and is universally known as the "Garnett" Machine. The "Garnett" Wire lends itself particularly well to the opening of wastes and hard threads. Owing to its strength, rigidity



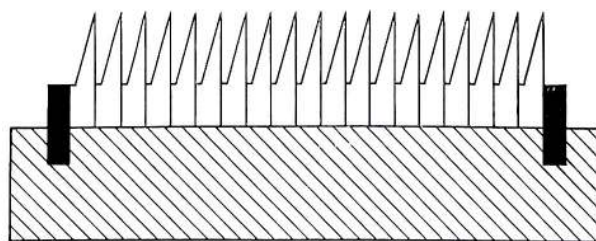
and the acute inclination at which the teeth can be cut, they get hold of the threads and such are their powers of resistance that they draw the fibres apart without themselves being bent over in the process. This machine can also be used very successfully for carding many classes of wools and other textile fibres, such as cotton, ramie, artificial silk, cow hair, etc.

A great advance in the clothing of rollers for such purposes was made in the year 1878, when Mr. J. H. Leather, the then managing partner of the firm, invented a method whereby the clothing could be securely put on in double rows, thus enabling rollers to be covered with clothing practically twice as fine as had hitherto been used, in cases where it is advisable to put the wire in grooves.

We here show a sketch of this method of putting in the wire in double rows. The shaded part marked C indicates the cast iron



cylinder, which is grooved to receive the deep-ribbed wire marked A. This deep-ribbed wire is pressed only half-way into the cast iron groove, thus leaving another artificial groove formed by the wires marked A, so that the wire with the shallow rib marked B can be pressed in between the same.



In order to get still finer clothing on the finishing end of a machine, and where it is not essential that the wire should be fixed in grooves, then we wind the wire on side by side on the surface of the roller, as mentioned on page 6 and as shown on the illustration.

Burring Rollers

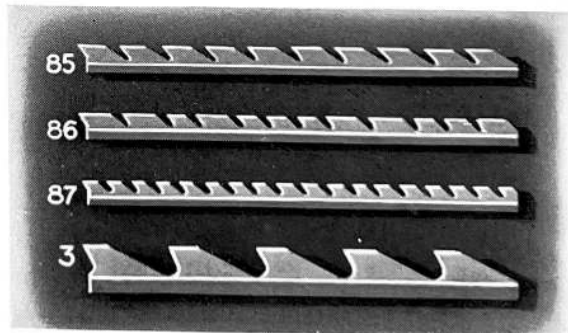
Another purpose for which "Garnett" Wire can be used at a very great advantage is for the preliminary opening of wool and the removal of burrs from the wool.

"Garnett" Wire form of clothing can easily be punched with a tooth which has a long flat top, and this form of tooth, combined with the rigidity of the "Garnett" Wire, makes it the most suitable type of clothing for the removing of burrs and foreign matter from the wool in the preliminary opening and carding operations. So suitable has this clothing proved for this purpose that it is now almost the universal practice to clothe the first lick-in roller of a Worsted Carding Machine with a strong "Garnett" flat-topped wire. The wool is carried forward by the teeth, and many of the burrs remain standing on the top of the flat tooth. An expeller roller which is revolving rapidly in the opposite direction to the lick-in roller expels or knocks out the burrs on to a tin dish which is now usually fitted with an automatic scraper.

Fine Burr Rollers

Some forty years ago a Frenchman named Morel introduced a system of removing burrs, seeds, shives, etc., from wool during the carding process. This apparatus consisted of a roller which was covered with a very fine "Garnett" Wire punched

with only a very small space between the teeth, and the wires were put on so closely together that it was practically impossible for the burrs to penetrate into the clothing. This roller has proved



Some examples of BURR WIRES

to be extremely effective for the removal of burrs and other vegetable matter after the wool has been partially opened and disentangled by the first lick-in, or by a coarsely-covered breast.

In England this fine covered “Garnett” Roller is usually applied in place of the third lick-in on the English type of Worsted Card, and on the Continental machines it is usually placed after the breast, and sometimes even between the first and second swifts on a two-cylinder Worsted Carding Machine.

The wool is removed from the breast roller by a circular brush, which presses the wool into the fine wire clothing of the burr roller. The clothing of the latter is so fine that it will only receive the fibres of wool, and the burrs are almost completely detached from any fibres which might detain them. They are therefore easily thrown out by the rapidly revolving expeller or guard roller. The burrs and other foreign matter are deposited on a tray fitted with an automatic scraper, whilst the burr roller is stripped by the following swift.

This has proved to be the most effective mechanical method of removing burrs that has yet been introduced to the trade. It is interesting to note that M. Morel adopted Mr. J. H. Leather’s patent of 1878 for double wire clothing in order to obtain a sufficient degree of fineness for these burring rollers. The method of clothing the rollers on the barrel, with the rows of wire supporting one another, was also adopted. In this way a very fine “Garnett” clothing can be obtained without difficulty.

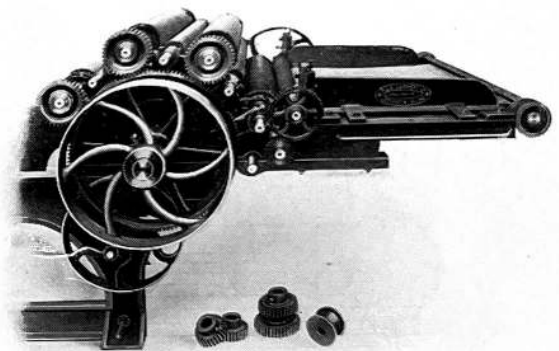
“Garnett” Breasts for Scriblers or Breaker Cards

Another purpose for which “Garnett” Wire can be used to a very great advantage is on the opening rollers or breasts of Carding Machines, either for woollen or cotton wastes.

It has been the practice for many years past, on the Continent and in America, to fit up practically all Scribblers or preliminary Carding Machines with breasts covered with "Garnett" Wire, and such breasts have now been adopted by the most up-to-date firms in this country. Such breasts were originally designed for the further opening of pulled rags (shoddy and mungo), but they have proved such a great advantage that they have been applied to machines for practically every class of raw material used in the woollen and cotton waste trades.

These breasts deliver the material to the first cylinder of the Carding Machine in such a well-opened condition that the output of the Carding Machine is increased, and the life of the card clothing is prolonged.

The "Garnett" Wire-covered Breast has the effect of opening up bunches of wool, small pieces of rag bits and soft wastes, and partially opens out even hard waste ends, so as to render them more easy to deal with when they come to the ordinary card clothing.



"GARNETT" BREAST
to Carding Machine

Some people seem to be under the impression that "Garnett" Breasts shorten the materials which are fed on to them, but we have ample proof that such an idea is entirely erroneous. In fact, we have had it from a very good and practical authority on Carding that Cards fitted up with "Garnett" Breasts will give a longer fibred ultimate result than those without when employed on the carding of mungoes and shoddies.

The reason given for this was attributed to the fact that if a man pulled up rags which were to be fed on to Carding Machines *not*

furnished with "Garnett" Breasts, he would grind them as much as possible so as to leave the minimum of rag bits and threads, in order to save his card clothing; but if, on the other hand, his Carding Machines were fitted with "Garnett" Breasts, he would not need to grind up the rags to such an extent, for the "Garnett" Wire-covered Breast would take care of the rag bits and threads, and open them out to such an extent as to leave the material in a fit state to pass forward to the card clothing proper.

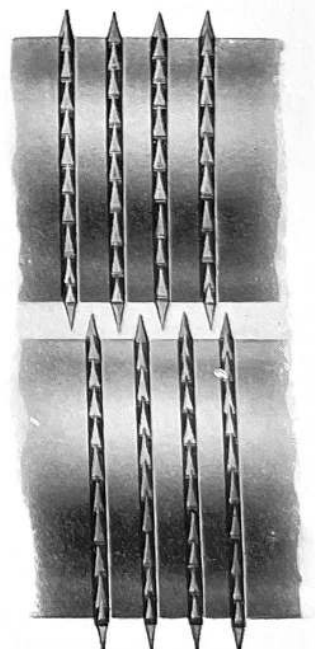
There is another point in connection with the "Garnett" Breast when dealing with pulled rags, and that is that the "Garnett" Wire-covered Rollers actually open out rag bits into a fibrous state, whereas ordinary Card Clothing is not strong enough to open out such pieces, but simply lets them drop on to the floor; consequently there are always a lot of rag bits picked up from under the fore end of a Carding Machine which are ultimately thrown away or burnt.

Feed Rollers

Our strong long-toothed "Garnett" Wire lends itself admirably to the covering of Feed Rollers for both Woollen and Worsted Carding Machines.

We usually cover Feed Rollers with very strong long-toothed wire, and only groove the rollers 3, 4 or 5 rows per inch, cutting the groove in one roller with right-hand thread and in the other with a left-hand thread. In this way the rows of teeth intersect, which causes them to hold the material better.

The wire used for these Feed Rollers has teeth of sufficient depth to allow for material to pass through loosely into the machine, so that the material is not unduly damaged.



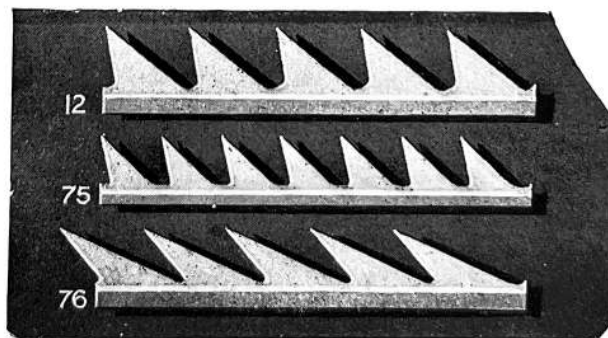
Doffers for Cotton Combing Machines

Fine "Garnett" Wire Clothing has been found to be a most satisfactory, efficient and economical clothing for Doffers on the Cotton Combing Machines, and is now largely employed by some of the best combing firms in the world.

Preparers or Knotbreakers

We make a very strong long-toothed wire in cast steel with hardened points, which is used with great effect as the covering for a machine known as the "Preparer or Knotbreaker". This machine has been found to be the most efficient machine for preparing weavers' wastes, such as thrums and knots, so as to render the material in a suitable condition for feeding on to the "Garnett" Machine proper. The same machine can also be used for pulling up jute, bagging and certain classes of ropes. In fact, it is a very strong and substantial opener for any class of very strong or hard material.

Although there are now other makers of Saw Tooth Wires in the world, yet we claim to be still the largest and leading makers of all types of "Garnett" Wires. The very large stock of tools and equipment which we possess enables us to turn out practically every style and form of tooth which can be imagined or desired, whereas other firms with a smaller number of machines and much smaller collection of tools can only produce and supply some of the commoner types of wire.



Then again, our long experience in the trade has given us exceptional knowledge in the selection of the best possible qualities of wire to use in the making of "Garnett" Wires.

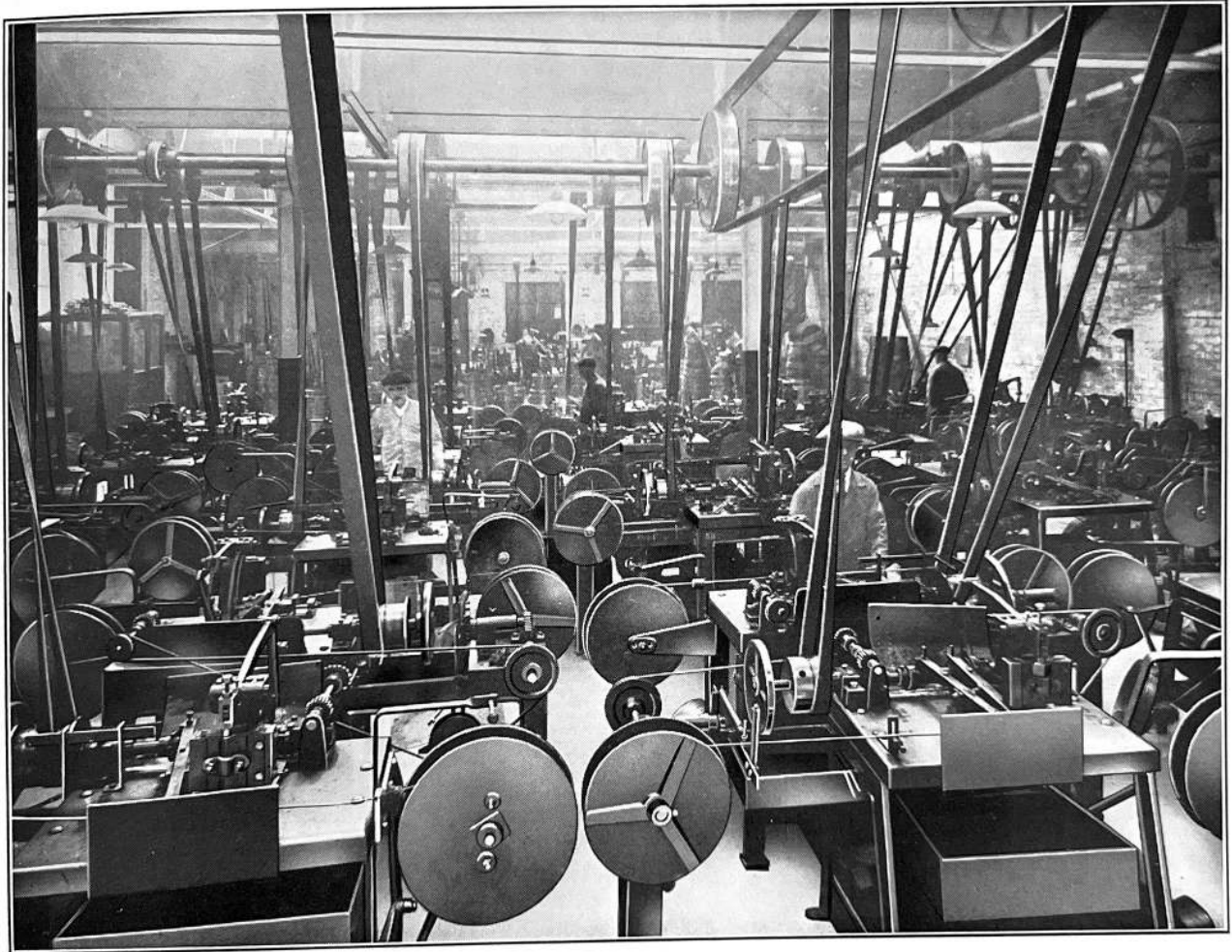
We can supply wire made from the best Mild Steel Rods or made from Sheffield Cast Steel, the latter quality with points hardened by our Patent Electric Process.

After a long experience with this Cast Steel Wire, we are now able to produce a wire which is really pliable, so that it will wrap easily round a roller, and with points which are really hard.

Owing to the large number of machines we possess and the large quantities we make, we always have large stocks of standard types, and can usually supply such **FROM STOCK.**

In conclusion, we submit that the secret of all success with Pulling, Opening or Carding Machinery is to keep the clothing in really tip-top order. We have noticed that the firms who are most successful are those who pay the greatest amount of attention to the condition of the clothing of their machines. ¶ In fact, it is a truism to say that if your clothing is not kept in good condition your profits will suffer.





Approximate Weights of Wire required to Reclothe the following Rollers

1 Swift of "Garnett" Machine	60 in. × 30 in. cut 8, 10 or 12	...	...	70 lb.
1 " " "	60 in. × 30 in. cut 16, 20, 24 or 26	...	...	170 lb.
1 Doffer " "	60 in. × 24 in. cut 8, 10 or 12	...	...	56 lb.
1 " " "	60 in. × 24 in. cut 16, 20, 24 or 26	...	...	136 lb.
1 Swift " "	60 in. × 20 in. cut 8, 10 or 12	...	...	47 lb.
1 " " "	60 in. × 20 in. cut 16, 20, 24 or 26	...	...	113 lb.
1 Doffer " "	60 in. × 16 in. cut 8, 10 or 12	...	...	37 lb.
1 " " "	60 in. × 16 in. cut 16, 20, 24 or 26	...	...	91 lb.
1 Fancy " "	60 in. × 9 in. cut 8, 10 or 12	...	...	21 lb.
1 " " "	60 in. × 9 in. cut 16, 20, 24 and 26	...	...	51 lb.
1 Stripper " "	60 in. × 6 in. cut 8, 10 or 12	...	...	14 lb.
1 " " "	60 in. × 6 in. cut 16, 20, 24 and 26	...	...	34 lb.
1 Worker " "	60 in. × 3½ in. cut 8, 10 or 12	...	...	8 lb.
1 " " "	60 in. × 3½ in. cut 16, 20, 24 or 26	...	...	20 lb.
1 Licker-in " "	60 in. × 12 in. cut 6	...	...	31 lb.
1 " " "	60 in. × 9 in. cut 6	...	...	23 lb.
1 Feeder " "	60 in. × 2½ in. cut 5	...	...	9 lb.
1 Preparer Swift	48 in. × 24 in. cut 5	...	...	90 lb.
1 " Worker	48 in. × 4 in. cut 5	...	...	15 lb.
1 " Feeder	48 in. × 3 in. cut 3	...	...	7 lb.
1 Cotton Taker-in	49 in. × 9 in. cut 8	...	...	15 lb.
1 " " "	45 in. × 9 in. cut 8	...	...	14 lb.
1 " " "	41 in. × 9 in. cut 8	...	...	12½ lb.
1 " " "	37 in. × 9 in. cut 8	...	...	11½ lb.
1 " " "	49 in. × 9 in. cut 6	...	...	11 lb.
1 " " "	45 in. × 9 in. cut 6	...	...	10 lb.
1 " " "	41 in. × 9 in. cut 6	...	...	9½ lb.
1 " " "	37 in. × 9 in. cut 6	...	...	8½ lb.

1850-1937

“GARNETT” WIRE

Its Application

INSTRUCTIONS FOR THE
RECLOTHING OR RE-COVERING OF ROLLERS
WITH “GARNETT” WIRE

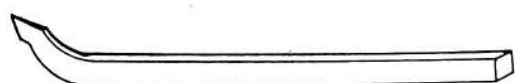
WE think it is not out of place in this booklet to give some instructions, for the benefit of those people whose mills are not within easy reach of our works, as to the best methods of reclothing their rollers with “Garnett” Wire.

Taker-in Rollers for Cotton Carding Machines

If the following instructions are carefully carried out, it is not a difficult matter to reclothe such rollers, provided one possesses a screw-cutting lathe fitted with a compound rest and a suitable set of small tools.

The lathe must, of course, be of sufficient length to admit rollers of 6 ft. or 7 ft. between the centres, and sufficiently high so that a roller of 9 in. diameter will clear the saddle. The shafts of the rollers should be supported by steadies, fitted with hard wood or brass bearings, which should be placed as near to the cylinder ends as may be found convenient. These steadies are used so as to support the shafts and prevent them from bending or breaking when pressure is put on the roller by the Wire-Inserting Tool.

Cotton Taker-ins are usually clothed with eight separate threads to the inch. This, of course, means that each thread is 1 in. lead, and it is therefore necessary to travel across the roller eight times in order to either take off old wire or insert new.



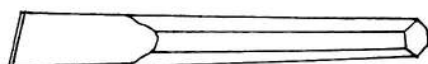
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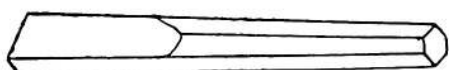
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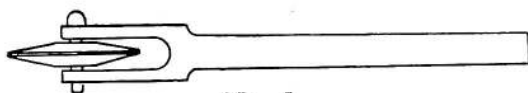
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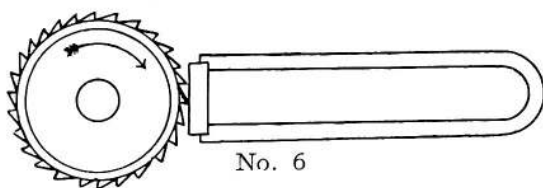
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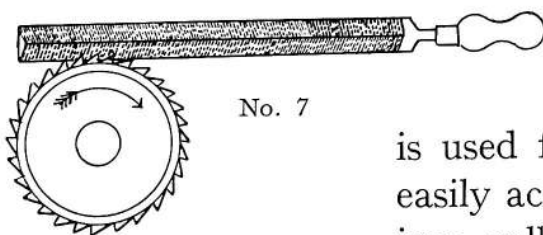
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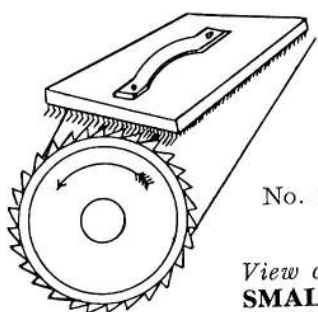
No. 5



No. 6



No. 7



No. 8

View of
**SMALL
TOOLS**

The wire is taken out by tools Nos. 1 and 2.

No. 2, which is the broad-nosed tool, should always be used if the wire is not too fast in the groove. This tool should be quite close to the roller, but not touching. If the wire is too fast in the grooves to be readily taken off by tool No. 2, it will be necessary to use tool No. 1, and in this case the nose of the tool should enter slightly into the groove of the roller, care being taken not to damage the groove.

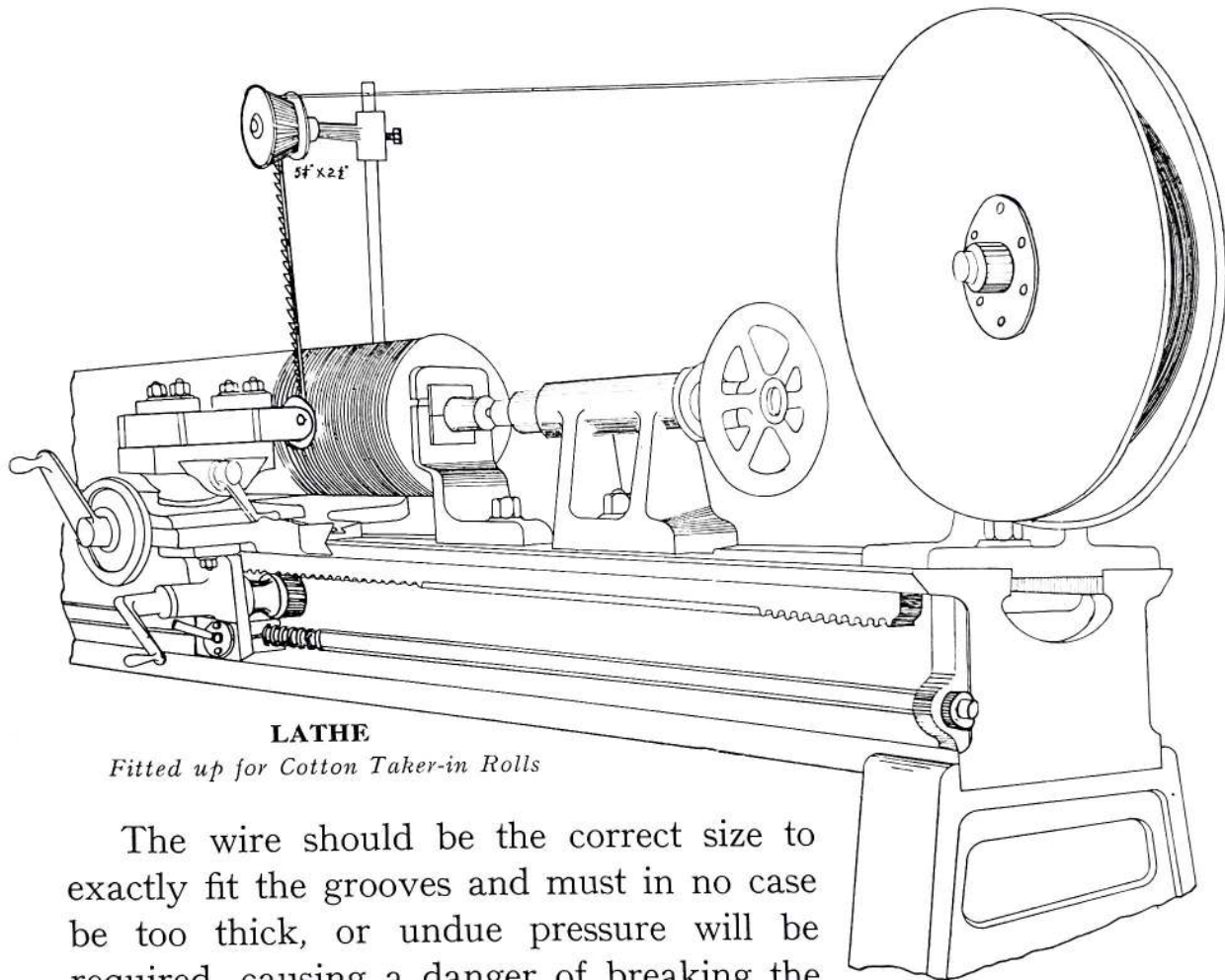
Tool No. 3 is used for loosening the end of the wire prior to running off.

Tool No. 4 is a small chisel for cutting off the teeth at the ends of the roller.

Tool No. 4a is called a set, and is used for caulking ends and joints. This is easily accomplished by gently tapping the cast iron roller on each side of the wire for a distance of about 4 in., and thus securely fastening same. There is seldom any difficulty about this, even in the middle of a roller, unless the groove has been cut very shallow, in which case the difficulty can be overcome by filing a portion off the base of the wire for a distance of about 2 in. from each end

required to be secured, and thereby causing the rib or base of the wire to lie beneath the surface of the roller. The two ends can then be securely caulked.

The wire is inserted by Mill or Staking Wheel No. 5, which is placed in the holder provided and securely fixed in the compound rest of the lathe or clothing apparatus.



The wire should be the correct size to exactly fit the grooves and must in no case be too thick, or undue pressure will be required, causing a danger of breaking the roller shafts. Especially is this so where shafts are of cast iron, as is the case with some makes of rollers.

After the roller is covered, about four teeth should be cut off each beginning and each finishing end of the wire, thereby making it an easy matter to securely caulk all the ends.

The next operation is grinding or topping.

For this purpose the roller should be run in the opposite way from which it is covered, or with the teeth running biting way. The surface speed of the roller for this operation should be about 400 ft. per minute. The truing-up is done first by placing the Topping File or Emery Block (Sketch No. 6) in the holder provided for same, and, after fixing in the compound rest, the file is brought into slight contact with the wire and allowed to traverse the length of the roller.

Feather edging is next done by holding the Feather Edge File (Sketch No. 7) firmly in the hands and allowing it to traverse across the roller as many times as there are rows of wire per inch. For this process it is necessary to stop the lathe after each traverse across, partly to avoid accident but chiefly in order to place the file between the correct rows of wire. This process *ensures* a good needle point.

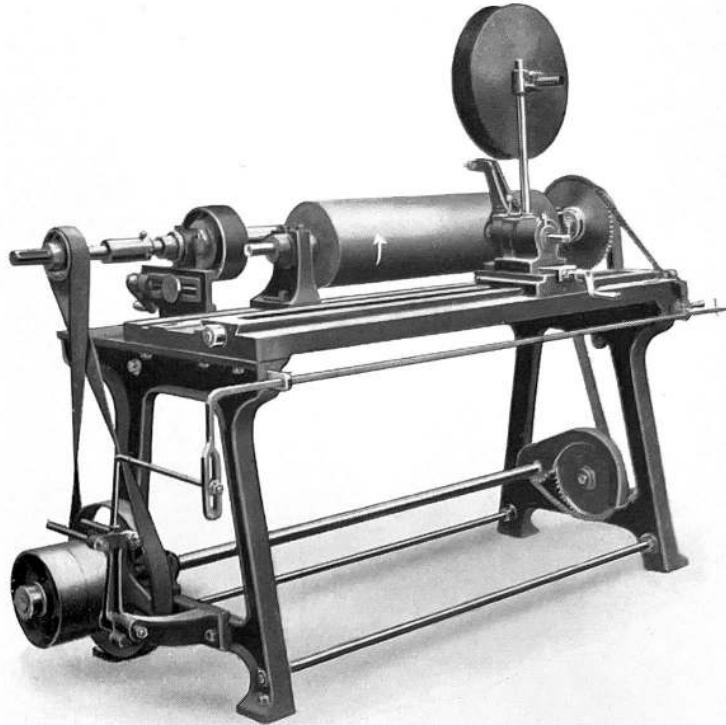
The roller is now ready for burnishing. This is a very simple process. A small quantity of oil is put on the roller, after which the roller is set in motion at a surface speed of 600 ft. per minute, with the teeth running backwards. The Hand Card is then held against the roller until the wire feels quite smooth. This usually takes about twenty minutes.

Licker-in Wire Mounting and Grinding Machine

This is an extremely useful machine for those persons who have not got a suitable screw-cutting lathe available. The instructions regarding the reclothing of Cotton Taker-in Rollers which we have given above apply, in the main, when re-covering rollers in this Wire Mounting Machine.

It will be seen that the Wire Mounting Machine is also fitted with a Patent Traverse Wheel Grinder, so that the rollers may be ground true and cylindrical after the wire is inserted. The machine is also mounted with a Dressing Tool, which may be used for straightening and aligning the bent teeth of damaged rollers.

It must not be imagined that this grinding and straightening up can ever re-point the teeth of "Garnett" Wire, for it is obvious that when a wedge-shaped tooth of this character has once lost its keen point, it can never be regained by any method of straightening or grinding, but these grinding and dressing attachments are very useful for truing-up and straightening the teeth of Taker-ins which have been in use for some time, and will temporarily improve the work of such rollers.



Of course, the only way in which to make an old roller do equally efficient work to a new one is to reclothe it with new wire, and, as this can be done easily and at comparatively low cost by any firm which is properly equipped, it is worth while keeping these rollers in good condition, for the saving to card clothing and the saving in waste handsomely repays the outlay on the re-clothing.

Rollers of "Garnett" Waste-Opening Machines, "Garnett" Breasts, &c.

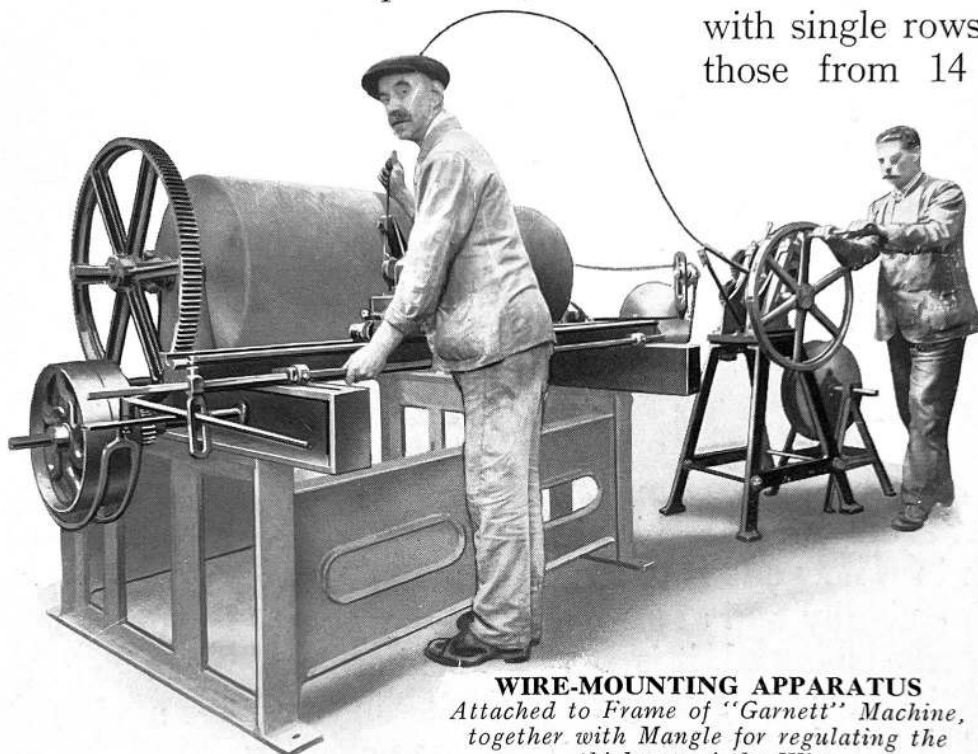
The instructions which we have given previously regarding the reclothing of Cotton Taker-in Rollers will also apply, generally speaking, to these classes of rollers, but additional instructions are also necessary when rollers are clothed finer than eight rows per inch, and especially for those which are covered with double wires.

For the re-covering of old rollers so covered, it is advisable—in fact, necessary—to make use of the small machine known as

the "Mangle" for rolling the wires to the exact thickness of base or rib, in order to exactly fit the grooves of old rollers.

This "mangling" is done simultaneously with the reclothing of the roller, as will be seen from the illustration of the Clothing Apparatus and Mangle on this page.

"Garnett" Waste-Opening Machine Rollers are clothed anything from 3 to 26 rows per inch, those from 5 to 12 rows being clothed with single rows of wire and those from 14 to 26 with



WIRE-MOUNTING APPARATUS
*Attached to Frame of "Garnett" Machine,
 together with Mangle for regulating the
 thickness of the Wire*

d o u b l e
 r o w s o f
 wire. Such
 rollers may
 be clothed
 in a screw-
 cutting
 lathe, pro-
 vided, of
 course, any
 firm has a
 lathe of
 such size
 to admit
 the rollers.

We must point out, however, that rollers of "Garnett" Machines may be so much as 20 in., 30 in., or even 44 in. in diameter, and, as there are not many firms who possess lathes on their premises of sufficient size to admit such rollers, we can supply a special Clothing Apparatus for dealing with rollers of all diameters from 2½ in. diameter up to 44 in. diameter.

Above we illustrate the Clothing Apparatus, with all the fittings and gearing which we supply printed prominently in black, and the framework of the "Garnett" Machine or Carding Machine on which the apparatus rests shown in shadow.

We will now give some further instructions for the reclothing of these classes of rollers.

Before commencing to clothe a roller, the wire should be regulated to the exact thickness required, a few short pieces being broken off as the wire comes through the Mangle until the correct size of wire is obtained to fit the groove. The end is then made secure, and the wire is ready for pressing into the groove. The Staking Wheel is then brought into position, and sufficient pressure (but only just sufficient) is put on the wire to press it into the bottom of the groove. The Lathe or Clothing Apparatus is then turned forward about 2 ft. and then turned back a few inches by hand, in order to see if the wire is fastening properly in the groove.

For rollers up to eight rows per inch the wire may be moderately tight, but from eight rows upwards it must not be inserted very tight, or the groove of the roller will be broken. As a guide it may be said that a lift of 3 or 4 lb. should pull out the wire again. If at this stage the wire is not an exact fit, the Mangle can be slightly regulated to suit requirements. It is not, however, necessary to begin again.

The lathe is now set in motion, and particular attention given to the Staking Wheel to see that it is running in the centre of the pin on which it revolves. It must on no account be rubbing against the inside of its holder. This is easily regulated by the slide rest.

The lathe must be stopped from time to time and turned back by hand to see if the wire is the correct size, because if the wire should be entering the groove a little too thick it would gradually push the groove over.

The man operating the Mangle should give particular attention to the coil of wire and keep a look-out for piecenings, and should give timely notice to the workman doing the clothing, so that he has time to stop his lathe before the piecening arrives at the Mangle, otherwise serious damage may result. If, however, a piecening does arrive at the Mangle unobserved, the Staking Wheel

must be immediately twined out and the lathe stopped. When a piecening arrives, for the last few feet of wire the lathe should be turned by hand until the Staking Wheel is practically on the end of the wire; the lathe is then turned backward and forward four or five times so as to have the end properly secure, leaving the Staking Wheel pressing the extreme end of the wire. The other end is then placed in the Staking Wheel touching the first end, and the lathe operated a few inches backward and forward. The lathe can then go forward about two or three rounds. The piecening should then be located, and a cross made in chalk so as to be able to find it later, as it is not advisable to properly caulk the joint until a few inches more of the roller is covered with wire. After having got a few inches away from the piecening, the lathe should be stopped and the joint properly secured with the Caulking Tool. This is done by gently tapping the cast iron roller on each side of the wire for a distance of about four inches, and also the next three or four rows on each side. The chalk can now be brushed off, as the chalk should always indicate that a piecening is not properly finished.

The reclothing of rollers with “double” or A and B wire requires special attention. The A wire is pressed into the groove like a single wire, and forms a groove for the B wire. In pressing the A wire into the groove, great care should be taken not to put on too much pressure with the Staking Wheel, or the rib of the wire on which the pressure is put becomes bruised and makes the groove for the B wire much narrower. This causes excessive mangling of the B wire and makes it difficult to insert, and at the same time rolls it out too wide, making the points of the B wire stand higher than those of the A.

The way to fasten double wire at the ends of the rollers can best be understood by a careful examination before taking out the old wire.

“Garnett” Wire is usually inserted at a speed of from 20 to 50 ft. per minute, according to the skill of the workman.

