Machinery
and Appliances.

IMPROVED ARRANGEMENT FOR
GRINDING CARDING ENGINE
PLATS.

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It has long been admitted by practical men
that carding is the most important process in
the series grouped under the head of and
collectively described as cotton spinning. That
this conviction is both widely and strongly
entertained is proved by the great amount of
money, time, and ingenuity, that has been spent
upon the improvement of the card during the
past fifteen years. That this labour has not
been misspent the results attained testify for
that an unprecedented advance towards perfecti-
on has been made will not be disputed by any
one having the slightest knowledge of the facts.
The harvest of these labours is the revolving
flat card, which has now greatly distanced all its
competitors. But perfection in the structure of
the carding engine alone is not sufficient; how-
ever good a start may be made the wear and
tear of usage soon carry it away from that
position. This is most especially and quickly
felt in the necessity of grinding and the conse-
quent wearing down of the card clothing. For
some time the ordinary arrangements for grind-
ing have been known to be radically defective,
and attempts to remedy the faults of the system
have evoked a good deal of ingenuity. We have
previously drawn the attention of our readers
to several of these, and have pleasure now in
calling it to what is, we believe, the most recent
one.

This is the invention of an improved arrange-
ment for grinding the face of the card clothing
of the flat in such a manner that they will work
perfectly true with the surface of the main
cylinder; in other words, to ensure such ac-
curate grinding that all the points of the wire
upon the flats when in their working position
shall be equi-distant from those of the clothing
upon the cylinder, so far as accuracy of grinding
can effect that object. That the ordinary method
of grinding them with their working surfaces
uppermost is unsound, any one will admit when
we remark upon the well known fact that a bar
of iron suspended horizontally upon its exten-
tremities will be deflected more or less by its
own weight, so as to form a slight curve. This
curvature will be increased when pressure comes
to be applied, as when in the case of a card flat
the grinding roller is acting upon it. The
result in this instance will be that the
greatest abrasion of the wire will necessarily
be near the ends of the flats, and the least in
the central part, so that when the flat is
brought to its work it is impossible to set it
accurately to it. If set to accord with the con-
tdition of its central portion, the sides will be
too distant and will very imperfectly card the
cotton, probably rolling it; if set for the sides
to work properly, the wire upon the central
portion will come into contact with that of the
cylinder, and will nip the cotton, rolling the
single fibres into small balls, commonly called
neps. The presence of these, it is well
known, very seriously depreciates the value of
any yarn in which they may appear.

Mr. Seal has, therefore, along with other in-
ventors, so devised his arrangement that the
flat shall be ground in its working position of
de face downwards. This ensures that the face
of the flat shall thus be ground perfectly level
from one end to the other, admitting thereby
the most accurate adjustment to the periphery of
the cylinder, so essential for the production of
the best work.

The manner in which this is accomplished is
shown by the accompanying illustration. Fig.
1, we may observe in passing, is the arrange-
ment devised by the inventor for application to exis-
ting cards, and Fig. 2 for new cards. In both
illustrations the portion marked a represents a
section of the main cylinder, and the dotted circle
b shows the relative position of the "take-in" to
the periphery of the cylinder. The chain of flats
is indicated at c, and d similarly points out the
bottom roller or pulley around which the chain of
flats passes. To the bracket e, which carries
the roller d, the inventor casts or attaches a
guide f, which consists of a flat surface arranged
so as to be tangential or nearly so, or it may be
placed rather lower to the cylinder and another
part f', which is properly curved to receive the
flats and deliver them to the guide f, which en-
sures their proper subjection to the grinding
process. In Fig. 1 the flat portion of this guide
is shown as above the edges of the flats; in Fig.
2 it is given as arranged below.

In the arrangement delineated in Fig. 1, the
chain of flats as they pass from the curved part
of the guide f, and before they come into con-
tact with the periphery of the grinding roller h,
pass upon the upper surface of a strong plate
spring g, which presses them upward against the
flat part of the guide f as they pass the grind-
ing roller h. In Fig. 2 the weight a performs the
same function. Theoretically we regard this
as the more correct arrangement of the two,
because in the first arrangement the spring g forces the upper surface ends of the flat—those which in the old
style were known as the grinding surfaces—
against the flat face of the guide g, and the
grinding takes place upon such a position of
the points of the card wire as results from the
contact of these two surfaces, which may be
we don't say wide—different from the face
presented by the contact of the actual surfaces
upon which the flat travels when at work, and
the flat of the guide in Fig. 2, in which the
weight presses the two together, thus ensuring
grinding from the actual working face of the
flat. In the first arrangement this is not as
fully assured. The arrangement shown in Fig. 1,
however, perfectly eliminates the defects arising
from the deflection of the flat. In the
second, a step is made in the flat part of the
guide which receives a rib upon the flat, and
this levels the flat as it passes over the grinding
roller h. The grinding roller is adjustable in
both cases.

It will thus be seen that this invention secures
the grinding of the flats from their working sur-
faces, they passing along with their leading edges, slightly raised, by which their faces are
ground to a true surface and the proper angle secured to give the set required.

Our practical readers will now be able to form their own opinion as to the character and
efficiency of this invention. In conclusion, we need only say that Mr. Seel is thoroughly
acquainted with his subject both in practice and theory, and therefore qualified to be his own
critic, which is an advantage, as it were more generally the property of inventors it would pre-
vent the world being troubled with a large number of crude and imperfectly wrought-out
ideas. Those who wish to know more of this excellent device may write to Mr. Seel as above.

THE MECHANICAL BURRING OF FOREIGN WOOLS.

The problem of the burring of wool is one of those in wool manufacturing that have
occasionally very long and laborsious researches. When foreign wools began to be employed,
especially those of La Plata, manufacturers found themselves confronted by a serious
drawback that the definite adoption of these wools was delayed for a considerable period.

The fault is owing to the numerous quantity of barra (strictly speaking, of the seeds of the
*medicago estiva*) which they contain. This seed is enclosed in a funnel-shaped envelope
composed of very slender filaments, rolled on one

burrs contained in the sliver. Their idea, which originated with Hoffer, of Leipzig, had been
previously reduced to practice, but abandoned, or nearly so, in consequence of unsatisfactory
experimental results. The machinists named returned, however, to the problem, and suc-
ceded in obtaining a result that had a short interval of popularity, but is to-day almost enti-
tirely abandoned. The notable trial which took place between them and Mr. Isaac Holden,
directed the attention of the combing industry to the weak side of this department of manu-
facture. Mr. Holden had already put into practice the idea of removing the barra from long
wool by chemical means, but after spend-
ing considerable sums of money it was found to
be an unsatisfactory method.

It now appeared as if every comber wished to
have his own burr system; there was a veri-
table struggle as to which factory would leave
the smallest amount of barra in its sliver.
Among other experimenters in this field of in-
vention, Messrs. Baret and Sons, of Roubaix,
Turcoing, produced a machine consisting of
three pairs of cylinders placed one above


another, with a distance of a few tenths of a
millimetre between them, which crushed all the
barra present in the wool after washing without
any preliminary sorting. Messrs. Parfait
Dubois, or rather M. Meselle, next produced a
machine of the same class but which differed in
that the wool underwent a drawing process before it passed between the crushing rollers.

Another in the form of a spiral, which unroll
during work, and blend in parallel lines with the
filaments of wool in such a way that they
constitute an obvious fault in the thread, and
afterwards in the fabric. Attempts were at
once made to eliminate this vegetable body,
and the process of eliminating it was called, in
French, échaudage; in English, *burring*.

Messrs. Houzet and Teston, and subsequently Messrs. Célestin Martin, of Verviers, did much
in the direction of producing special machines
for this purpose, but these machines are only
applicable for short wool. Chemical cleaning
progressed at the same time, but this plan,
although employed on a large scale, is and
always will be faulty, because the contact of an
acid with a body as sensitive as wool cannot
but injure it in some degree. The combing of
wool, therefore, has had to struggle with this in-
convenience for more than thirty years, and but
few appliances for removing it have been
introduced during this period.

In 1883, great progress was made in wool
burring by the Messrs. Harnel, of Val-


des-Bois, whose efforts were seconded by Mr.
Jonathan Holden, of Roches, who was the first to apply to the combing card a pair of cylinders,
one of which was fluted and designed to cut the

About the same time Mr. Isaac Holden
announced that he had brought out, or at least
purchased from Mr. Colman, of Roubaix, an inven-
tion applicable to the card, and which was the
desideratum that had been so long sought for.
It consisted in making the picking shafts move
from right to left, instead of from left to right,
but no great success attended it.

In 1884, at the time when MM. Harnel
issued their patent, M. Fraysse, wool comber,
Antwerp, brought out a machine designed for
the burring of the wool in the raw condition by
means of water. The principle on which the
inventor relied was the washing away of the
barra from the raw wool by means of cold water
without working the wool up, so that when dry
it could be sold again as washed wool free from
burra. It was based upon the fact that in the raw
wool the burra is found attached to the extremity
of the filament. In its natural condition it
adheres very loosely, as it has only been caught by
the animal while moving about in the field. Con-
sequently it must be more easily and thoroughly
extracted than when the wool has received the
least washing, as it then becomes fast in the


due and imprisoned in numerous filaments.
This machine consisted substantially of a large
hollow drum clothed on the outside with fine

needing set very closely together. The wool was
spread upon these needles, and by means of cold
water under pressure it was forced in among them
and the burra remained on the extremity of the
needles from which they could be easily taken
away. The wool was thrown off by some more
water flowing from the interior of the cylinder.
The invention was an ingenious one, but the
work was not satisfactory. Its principle, however, being admittedly reasonable,
considerable amount of capital was placed at
the disposal of M. Fraysse to help him in per-
fecting it.

For four consecutive years the invention has
been constantly improved, and another has been
beaten which makes the single stroke to treble the production of the machine while perfecting it with respect to the stripping
off of the burra. We refer to the feeding
apparatus of the Count of Nygruus, which is
claimed to be the best in this department.
It was only in August, 1888, that a machine was
produced which yielded thoroughly satisfactory
results. After extracting fifty per cent. of sand

and foreign bodies it gives a product which
after drying can be made up in bales and sold as
raw wool from the sheep's back without burra.
The first machines constructed have been sent
to the countries which produce burry wool. The
adoption of the method in Europe will probably make many of the countries which are too
advantageous not to be adopted sooner or later.
It is the only one, (in the opinion of our French
*Le Génie Civil*, to which we are indebted for
these particulars and the illustration of the
machine), that can guarantee regular progress in
combng, because it removes every burra from the
wool before commencing to work it up.

The results which the makers guarantee are as
follows.—From one kilogramme of raw wool it
takes away per minute at least 85 to 90 per cent.
of the burra and crushes the others—15 to 10 per
cent.—so as to reduce them to powder, whatever
be the nature and the quality of the wool. An
experiment made at the Hoboken-les-Anciers
yielded by two bales of fibre, which
The machine occupies three square metres.
It requires 1 h.p. to drive, and consumes two
or three cubic metres of water per day.

In New Zealand new "flax mills" are still going
up wherever there is a supply of phormium avail-
able, and it is to be feared that unless steps are at once taken to cultivate the plant on an
extensive scale the supply of the raw material will, in a few
years, or even months, prove inadequate to the de-
mand. Mr. W. Lamont, an expert on the subject, as he probably
be too much to say a great majority—of the mill-


owners and proprietors of flax swamps, with a
requisite regard of the future, cut all the leaves
close to the ground, a practice which in many cases
does not do more harm from the point of view of the
seeds of flax which may be done by the simple draining of swamps to
improve both the size and quality of the leaves, but the


capability of this is not yet understood. Until
plantations are made of the best varieties only, such as were used by
the Maoris for their large baskets, which
has never yet been accomplished, it would be a thou-
sand pity if this promising industry were to come to a standstill through the carelessness or greed of those
interested in cultivating the plant. If properly
managed, the fibre promises to be second only to
wool as an article of export. In some respects, in-
deed, it is superior; more, as employing labour
proportionately to a much greater extent, and diffus-
ing the profits more equally. The greater part of it
is produced by thousands of women and children,
employed by a very small number of heads
except at shearing time.

Mr. Howard Vincent has introduced into the
House of Commons for the third time a bill providing
that foreign goods capable of being marked shall be
stamped with an indication of the place where made
in order to prevent their being stamped after importation as
British manufacture.