

SELFIL

1970 CSIRO . (Self-twist)

1975 10 Selfil . Selfil

.

. 가 . Selfil

[]가

가 .

Selfil 1975 7 31 , Geelong

.

. **SELFIL** - CSIRO, G.W. WALLS

1.

[.](Self-twist) STT

.

[.]

가 .

[](Ring)

가 .

(1~2.2tex)

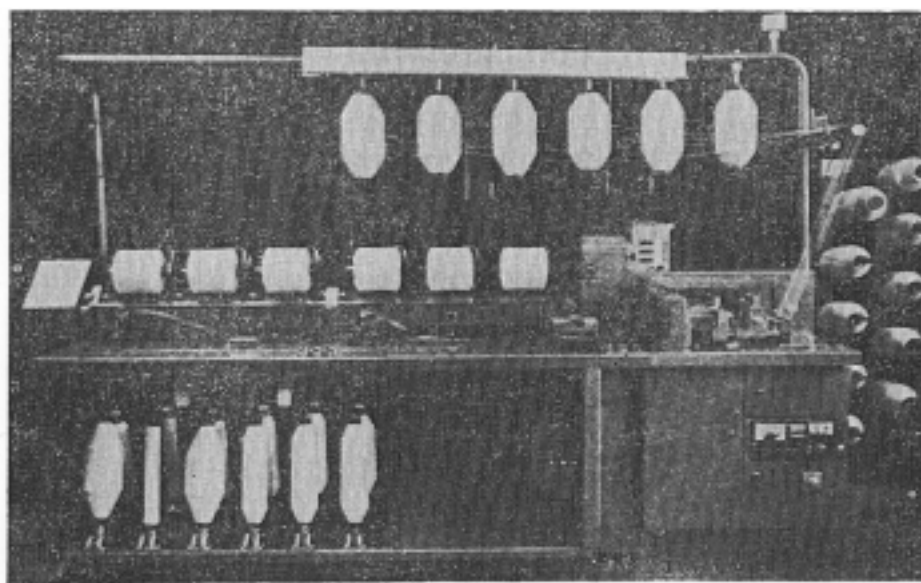
[.] (1). [

]가

[]가 .

2 [.] .

2 [.] 1 가
 .
 [] 가 가 가 []
] 2 .
 [](Selfil) .



SELFIL 精紡機



< 1> 1 가



< 2> 1 2 가

2.

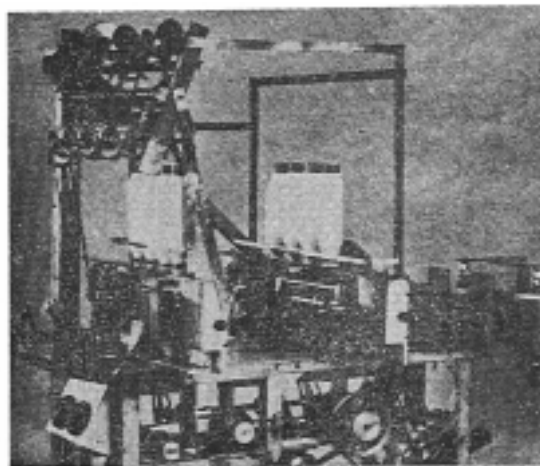
2-1.

3 [] 가

.

가 1969 .

[](Self- twist roller) .



< 3> []

[](Repco Self-twist)

Air bearing twist roller . [] [

] .

[] 1

.

[] 가

가 .

2-2.

CSIRO Basil Ellis Bob Tippet [] [

]가 가 2 가

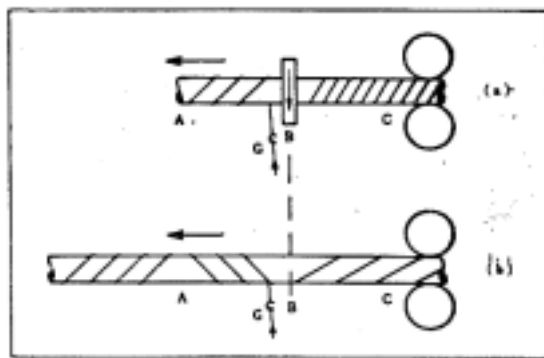
가 4 .

B 가 4(a)

[] (: S).

가 BC 가 . B 가 BC

[] (Z)



< 4> []

(a) G B 가

C

(b) B 가

가 .

Elastmer [](Disc)

. 5 [] .

(G)가

[] 가 . (G)

[]

. []

G

.

가

. , ,

[]

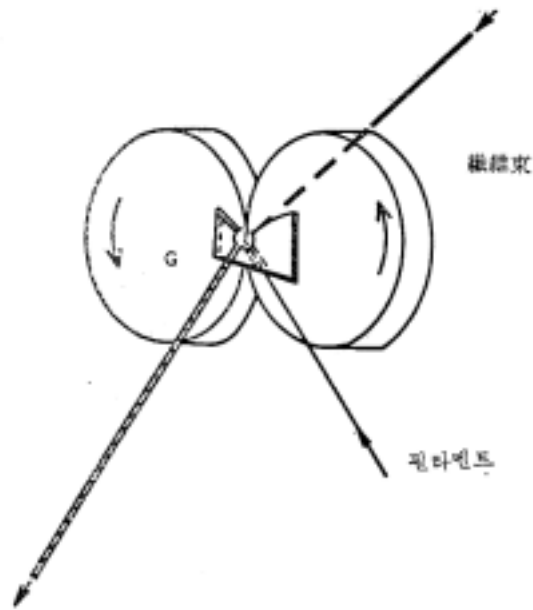
가

. G

,

가

.



< 5> []가

2-3. []

가

가

[]

.

6

.

[]

6mm

(tube)

[]

(Convergence point)

. []

[](Ceramic)

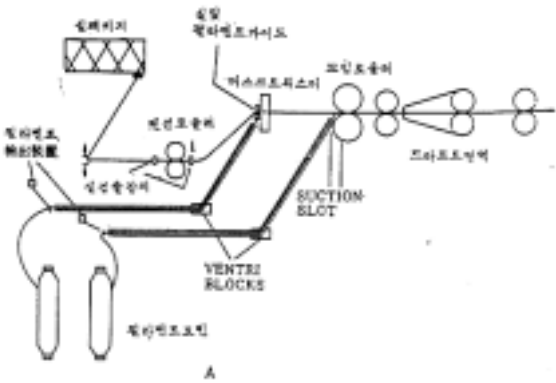
가

45°

.

가

(Venturi)가



< 6> []

2-4. (Winding)

가 [] (20~30g)
(5~10g) 6

(Tension roller) (C)

yarn package semi traverse yarn

package

package (Rewinding)

가

traverse ratio ribboning

5mm package traverse hard edge

6 [] 가

· []
· (Twist roller) yarn package
가 .

2-5.

[] 가 가 ,
venturi tube [] .
[] .

[] , top tension roller
[]가 , 가
package .

, (roving)
(twist roller) suction slot
inching 가 package
·

6 20 []
] 가
· (lot) []
[] ·
(creel) 5 .

3.

6 300m/ ,
1350 . (twist disc) 1.9cm

9,000r.p.m. . 1 2.2tex(20D) 1.7tex(15D) []

150mm($5\frac{7}{8}$ in) 171mm($6\frac{3}{4}$ in) traverse package winder

hard edge traverse

package . Package 28cm(11in) 가

4kg 가 , 24kg 가 .

Package dyeing clearer winder large package

package 18cm(7in) 1.5kg .

< 1>

番 手	2.2tex fil	1.7tex fil	生 産 量		
Tex	Ne	% Synthetic	% Synthetic	kg/machine hour	kg/ week
150	5.5	2.9	2.3	16.2	1,800
70	12.5	6.3	4.9	7.6	840
35	25	12.6	9.7	3.8	420
31	28.5	14.2	11.0	3.4	380
26	34	16.9	13.1	2.8	310
22	40	20.0	15.4	2.4	270

※効率 90%, 1 2 3時間

4. [] []

[] 10% []

(fine gauge)

(

)

[]

[]

가

· []

[]

·

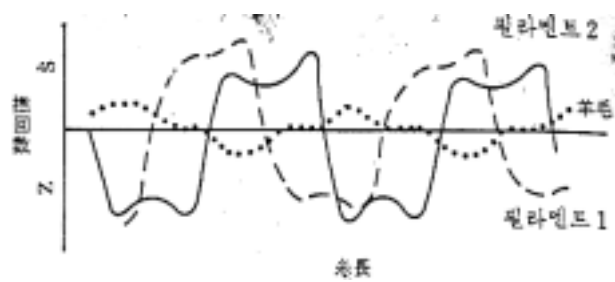
· **SELFIL** - B.C. ELIS

[]

·

1.

가 7



< 7>

(a)

(b)

2

가 square-wave

(c) 2 1

.

(d) (bulkiness)

.

, ;

(a)

(b)

(c) (bifter) (disc gap) .

2.

2-1. (stress-strain)

[] 가

, [] .

, [] 가

[]

, . 22tex 66 []

가 8 9 .

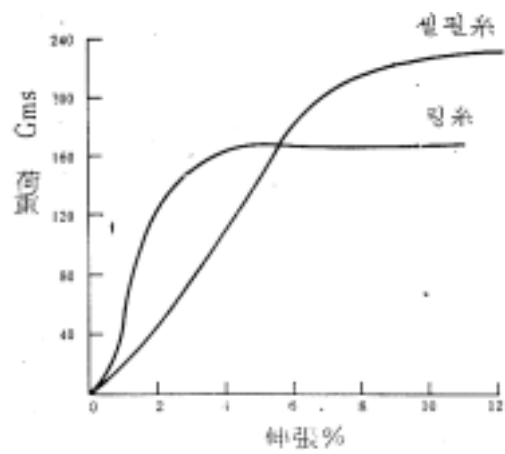
가 , [

] [] 가

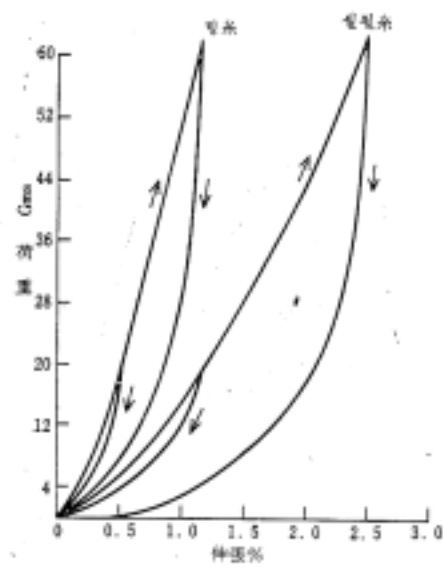
. ,

가 가 “ ”(handling)

.



< 8> (31tex [] [])



< 9> (31tex [] [])

2-2.

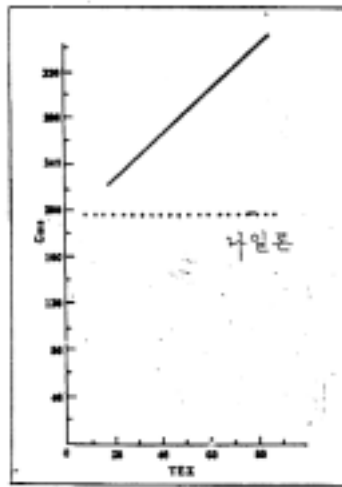
[]

가

10

1.8g/tex

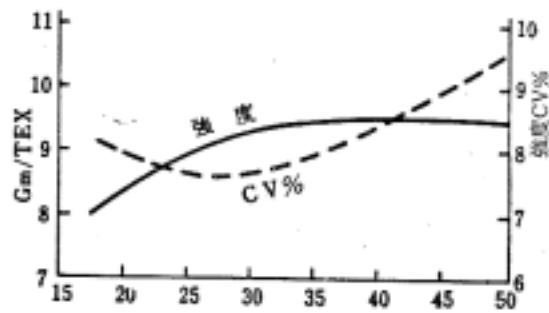
25%



< 10> (22tex)

2-3.

11



< 11> (30tex [])

30tex

1g/tex

가

30~35

가

가

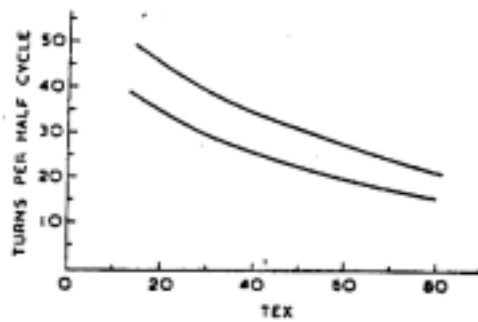
가

가 []

가 가 가

12

가



< 12> [] (2)

2-4.

[] [] (CV%)가

IPI가

IPI 2 [] 31tex

[] (Uster Index of Irregularity)가

1.3~1.35

< 2> Uster Classimat yarn spectrum

Yarn Type	SELFIL				RING			
Regularity	17.0				18.1			
CV								
Length (cm)								
Thickness	0.1	1.0	2.0	4.0	0.1	1.0	2.0	4.0
+400%	23	15	11	6	13	13	6	6
+250%	65	24	12	8	60	26	11	12
+150%	185	37	17	8	165	47	24	19
+100%	511	52	22	10	565	140	95	31

2-5.

[] 가 . []

가 .

[] 가

5~8% . 가 package

dyeing .

3.

3-1. []

6 가

[] .

[] []

[], (fly) (fibre entanglement)

.

windage, ,

.

3-2.

19~26 μ .

가 .

[]

가 40

가 3 .

22 [] 21 μ

< 3> []

(Assuming 40 fibre/cross-section, 22-dtex Nylons)		
Wool diameter (um)	Tex	Worsted count
19	19	46
20	21	42 1/2
21	22 1/2	39
22	24 1/2	36
23	26	34
24	28	31

3-3.

4

[]

30 / .

< 4>

Cone Roving — 2kg packages Yarn 35tex — 1 1/2 kg cheeses Nylon 22/5 — 2kg bobbins			
Task	Element time(min)	Frequency per machine/ hr	Total time (min/ machine/hr)
Roving creel	0.93	1.43	1.33
Roving break	0.60	0.35	0.21
Roving slub	0.84	0.91	0.76
Yarn doff (6)*	2.30	0.35	0.81
Yarn break	1.08	0.59	0.64
Yarn inspect**	0.67	0.07	0.05
Nylon creel	3.60	0.20	0.72
Nylon break	5.50	0.05	0.28
Fly removal	1.90	0.09	0.17
Total			4.97
*Including machine cleaning after doffing			
**Inspection of yarn path and convergencies after nylon break			

< 5> (35tex)

臺數/1人	操業効率 (%)	機械効率 (%)	生 産 量 (kg/shift)	相應되는 浬總數
6	40	90	163	600
8	53	88	206	770
10	65	86	260	970
12	75	83	300	1,120

(a) 58% package

(b) [] 20% .

[]

Roving-break가 0.01min/machine hr, Roving slubs가
0.19min/machine hr . 5 가

(c)

(Nylon break) []

가

3-4.

(machine-interference theory) , 5

[]

6 / , 6 / , 3

/ 75% 가 . 35tex

11 가 .

90% 1000

[], [] 가 .

26, 22tex []

. Package 1.5kg large package 가 .

4.

4-1. 가

가 가 .

package [] package

[] . ,

. [] [] 10~12 /kg

4-2.

package가

. , (detecting head)
 (tensioning disc) 가 가 5mm 가 .
 (fibre entanglement)
 (clearer) .

5.

[] CSIRO

(a) (Double Jersey)
 18 : Ponti-de-Roma, double-pique, (yarn dyed jacquard)

22 : Ponti-de-Roma, 2 × 2 ,

(b) (Single Jersey)

22, 24 28

(c) (Fully Fashioned)

15 21

(d)

(e)

40 (Raschel)

50m 6 .

[] .

18 Ponti-de-Roma, 18 24 [],

22 Eight-lock(2 × 2) 25,000m

• , []

•

(a)

(b) (fly)

(c) (skewing)

(d) - 60%

(e)

(f)