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COMMONWEALTH of PENNSYLVANIA
DEPARTMENT of LABOR and INDUSTRY

LEWIS C. HINES, - SECRETARY

State Practice Bulletin No. 20

OCCUPATIONAL DISEASE PREVENTION



SAFE PRACTICE IN ASBESTOS MANUFACTURE

Deputy Secretary

Director

DEPARTMENT of LABOR and INDUSTRY

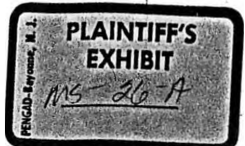
BUREAU of WORKMEN'S COMPENSATION

Frank K. Boal

Wm. H. Chesnut

OCTOBER, 1938

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*Uncontrolled
occupational diseases,
like uncontrolled
accident hazards,
are a costly
and needless
by-product
of industry.*

SAFE PRACTICE CONFERENCES

The joint sponsorship of a series of "safe-practice" conferences by the Pennsylvania State College and the Department of Labor and Industry has met with favorable response from industry.

These one day conferences are planned for safety engineers of Pennsylvania industries and deal with practical ways to eliminate occupational disease hazards.

Every scheduled speaker is from industry. An occasional exception would be a speaker outside of industry, but one having a background of practical plant experience. Members of the Department are not on the speaking program.

The method of approach for each conference is to cover but one specific subject where a hazard has been known to exist. All industries in the State which are faced with this hazard are invited to assemble at the college to hear experts in this field answer their direct questions concerning actual plant installations and procedure needed to combat the hazard.

This plan of selecting one outstanding Pennsylvania plant, that has defeated the hazard in question, and setting it up as a model of safety to those in the same industry and thus have a wide "group-handling" of a problem, has won the confidence of industry.

The Department wishes to thank the selected companies for their willingness in unselfishly disclosing the details of their manufacturing processes to competitors assembled at these meetings.

The Department has planned a release of illustrated safe practice bulletins, covering the subjects discussed, so as to coincide with these meetings.

SAFE PRACTICE IN ASBESTOS MANUFACTURE

Edited by:

Robt. L. Houtz

Advanced Chemist

In the manufacturing stages necessary to produce asbestos yarn from the mineral form of asbestos, various machines are used which produce asbestos dust.

Probably the greatest dust zones in an asbestos fabricating plant are found in the card room, and are the result of the severe processing of asbestos fiber by the carding machine.

Inclosure of the cards, with just the right amount of forced ventilation has been found to be the answer to the problem of card-room dust, by the United States Asbestos Company of Manheim, Penna.

A technical, illustrated paper on the safe removal of asbestos dust, not only in the card-room but in other parts of an asbestos factory, will be presented by Mr. B. W. Luttenberger, the factory manager of this company.

The material in Mr. Luttenberger's paper is so extensive that it is to be divided into two parts, the first half of which is to be presented at this conference and the second half at the Fall of 1939 series of conferences.

The following illustrated talk was presented by B. W. Luttenberger at a monthly safe practice conference sponsored jointly by Penna. State College and the State Department of Labor and Industry. This conference was held at the Nittany Lion Inn and was under the joint chairmanship of Dr. Frank C. Whitmore, Dean of the School of Chemistry and Physics of the College and John A. Robb, Director of the Bureau of Workmen's Compensation.

SAFE PRACTICE IN ASBESTOS MANUFACTURE

by

B. W. Luttenberger

Factory Manager

U. S. ASBESTOS COMPANY

Manheim, Penna.

Dust in the asbestos industry is nothing new. For many years there was little or no control. I have been in the asbestos business for eighteen years. When I came to this company, the only thing we had was a hood to move some of the air out of the department. In the intervening years we have been continuously striving to improve dust control. We had so-called ventilating experts design and install equipment in our plant to remove asbestos dust and many times, a week after the system was in operation, we might as well have thrown it out the back door. That has been our experience throughout the years in trying to control asbestos dust. We felt the only way to get the thing done was to do it ourselves. We did a lot of work putting in experimental hoods.

I took a trip to England to study the dust control system there, and found them superior to anything we had here. To demonstrate the recent improvements in our plant, I would like to show you the pictures of dust control systems we have installed. Records of the reduction in

dust counts will tell you clearly of the effectiveness of our exhaust systems. These dust counts were made recently by the chemical laboratory division of the Department of Labor and Industry. I understand the standard technique of collecting and counting was employed and that alcohol was the fluid medium in which the dust was trapped.

A list of these recent tests with the locations taken, follows:-

PLANT OPERATION	MILLIONS PARTICLES ASBESTOS DUST PER CU. FT. OF AIR
Crushing Machines (Area about 3 machines)	3.4
Carding Machines	2.1
Carding Machines	4.1
Spinning Machine	2.7
Cop Winding	1.9
Cop Winding	1.8
Textile Weaving Machine	2.5
Poster Winders	6.3
Twisters	3.2
Lape Weaving	4.9

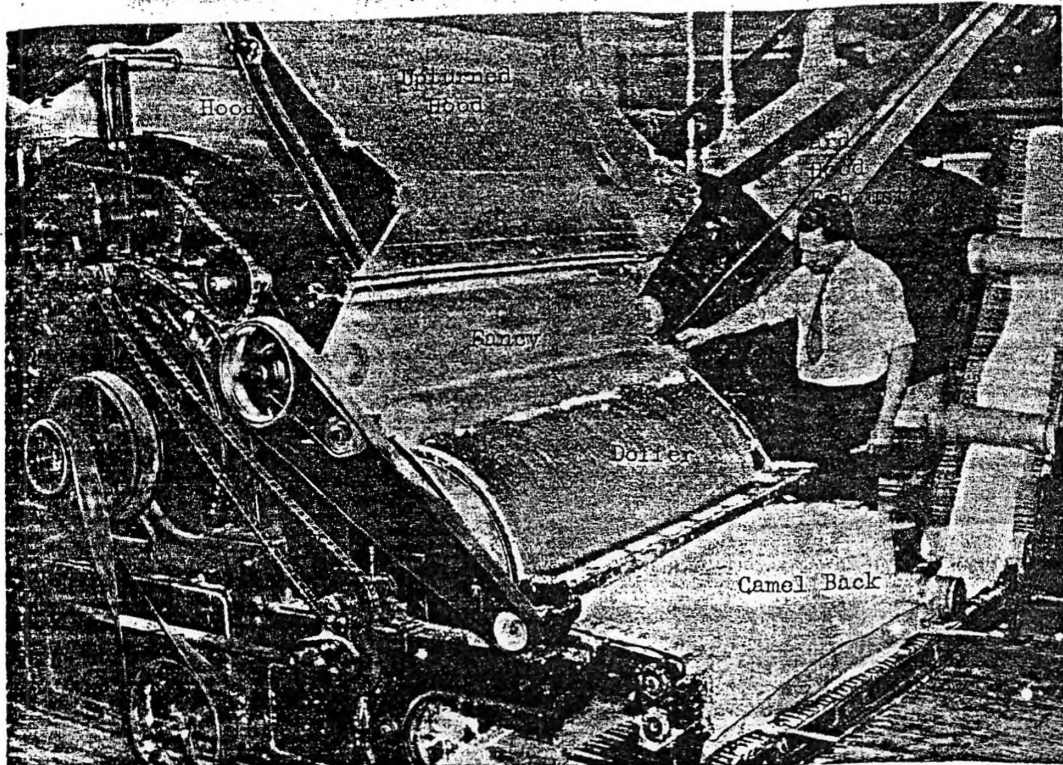


Fig. 1

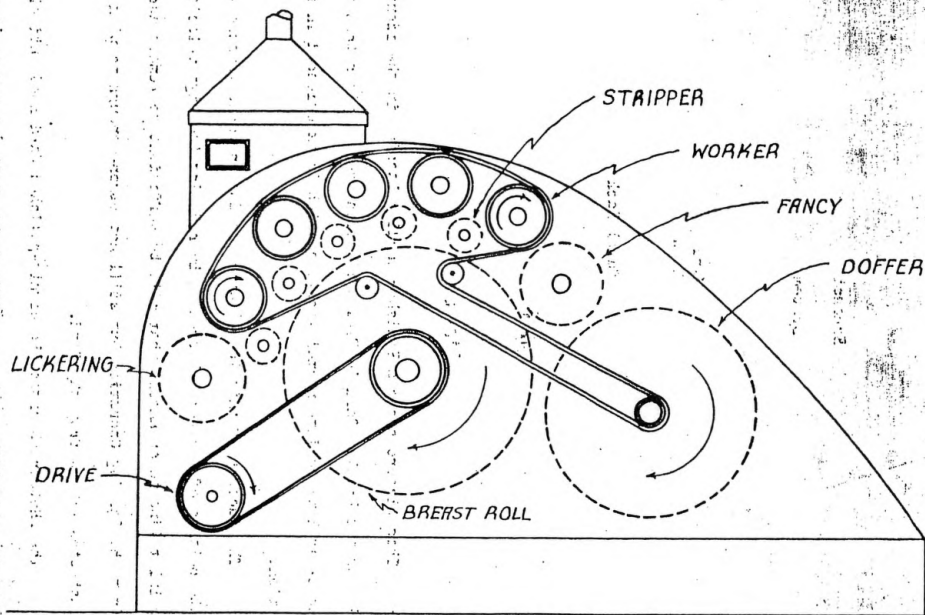
This is a rear view of a Breaker Carding Machine. The Dust Hood over the Doffer end of the Carding Machine may be raised since the section directly over the Doffer is hinged to the Hood proper at a point just beyond the Fancy.

This arrangement is convenient for periodical cleaning or adjusting of the Card. However, cleaning of the Card Rolls is not done within the Carding Machine, but the Card Rolls are removed and taken to an enclosed Cleaning Machine illustrated by Fig. 5

The Hood is constructed with three ply wood, stained and polished, and extends over the entire top of the Carding Machine from the Feed Rolls to a point beyond the Doffer Comb.

Our Company feels it has done a good job in the elimination of the asbestos dust hazard by reducing it to a minimum. Our policy has been to take one operation at a time and work with various types of ventilation setups until the dust is removed efficiently and the work-room atmosphere is cleared.

It has been a program of trial until the right method is found. We willingly cooperate with the State Department of Labor and Industry in releasing this material for other interested companies, or persons, who might find our solving of the U. S. Asbestos Companies problems of help to them in this broad safe practice field.



ASBESTOS CARDING MACHINE
DUST REMOVAL SYSTEM

Fig. 8.

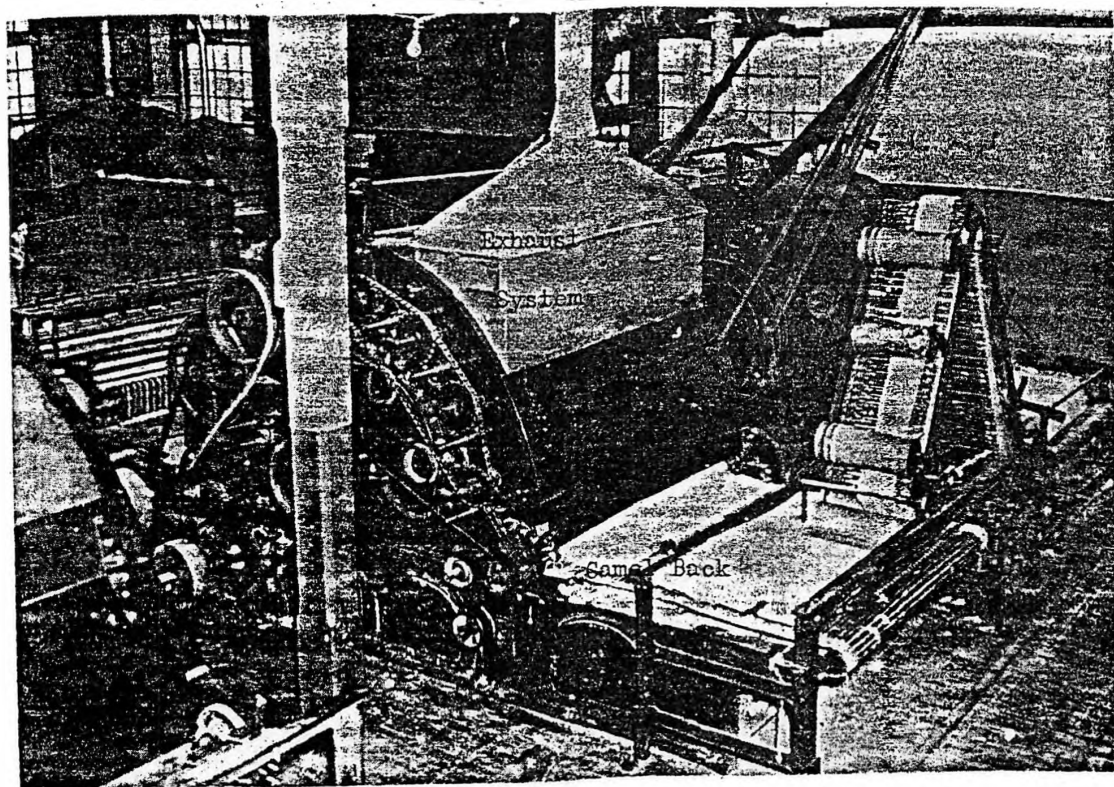


Fig. 2

This picture shows a **Finisher Carding Machine** in the identical position as the Breaker Card in Fig. No. 1 with the exception that the Hood Cover is lowered into normal location which is experienced in factory production.

The success of this installation is due in large measure to the delicate balance of air removal created by reducing the high velocity of the inlet line to an amount that will be sufficient to remove asbestos dust from the Carding Operation but still not strong enough to pick up the large asbestos fibers from the Card.

The Photograph shows the highly-polished Card Hood entirely free from asbestos dust, What was formerly the most dusty room in an asbestos factory is now the cleanest.

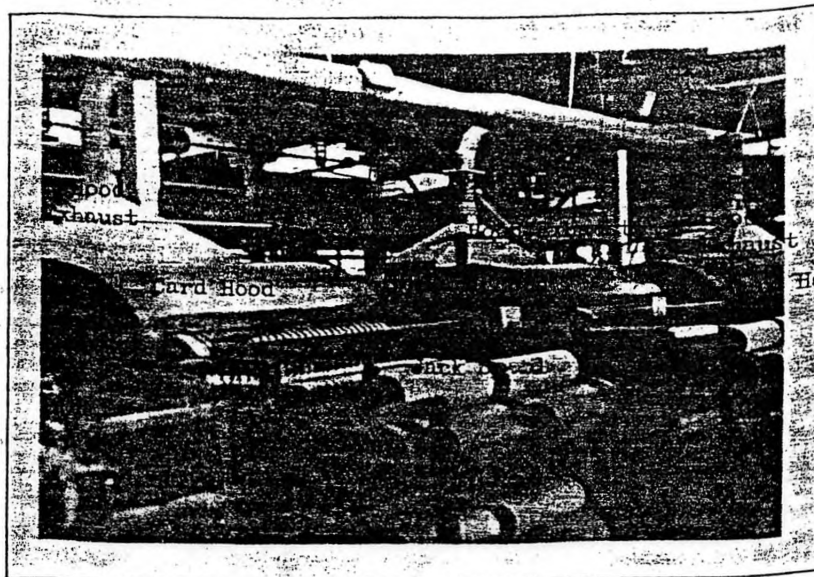


Fig. 4

General View of Exhaust System over
Carding Machines

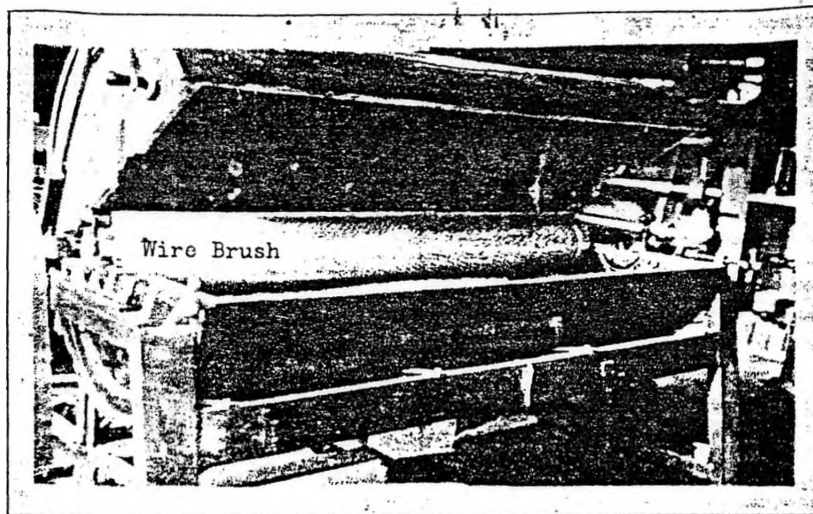


Fig. 5

An enclosed Cleaning Brush to clean Card Rolls. The Cover is shown in an open position but during cleaning operation the cover is enclosed and under forced ventilation. The ventilation line inlet to this Cleaning Machine tests 3600 FPM.

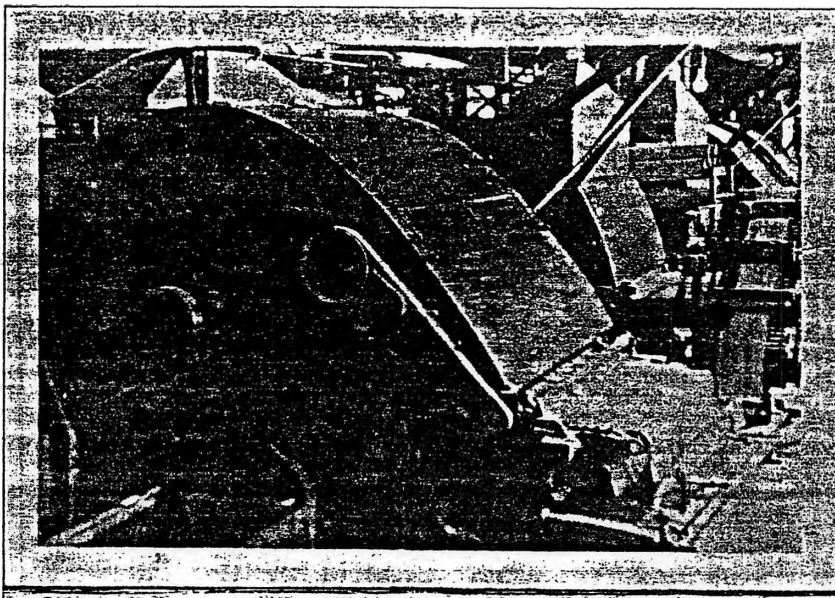


Fig. 6

Back View of Breaker Cards with Hoods closed.

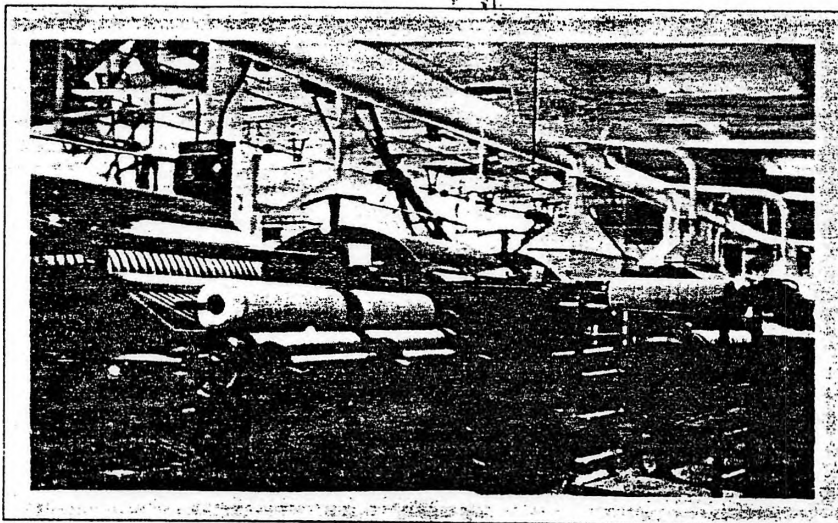


Fig. 7

Front end of Finisher Cards. General View of

Ventilation System

Velocity
3300
FPM

Velocity : 2200 FPM

PLAN OF EXHAUST FOR
COP WINDER
U.S. ASBESTOS COMPANY
Manheim, Pa.
Scale 1"=1'

Fig. 10

(This drawing is to clarify the photograph shown in Fig. 8.)

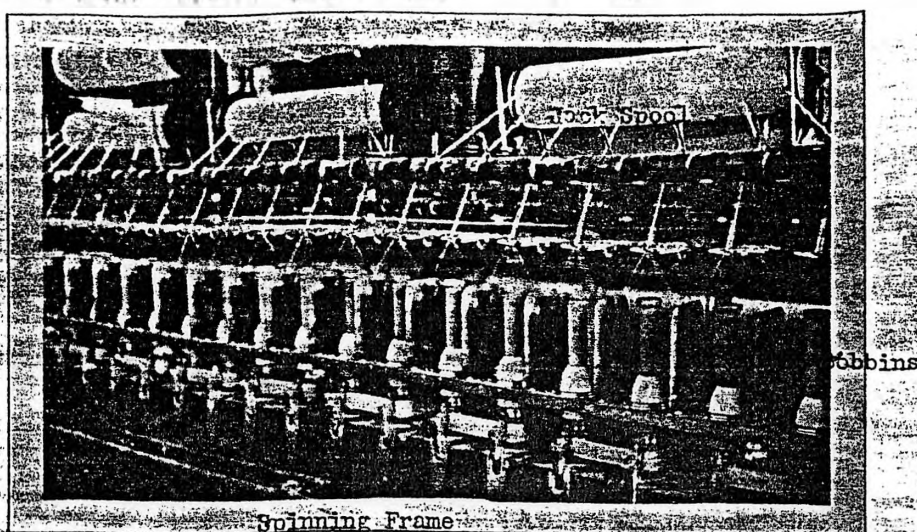


Fig. 11

The Spinning Frame which puts twist into the asbestos roving and converts it into yarn. The ventilation is situated within the base of the machine at the bottom compartment. (See fig. 15 with base opened)

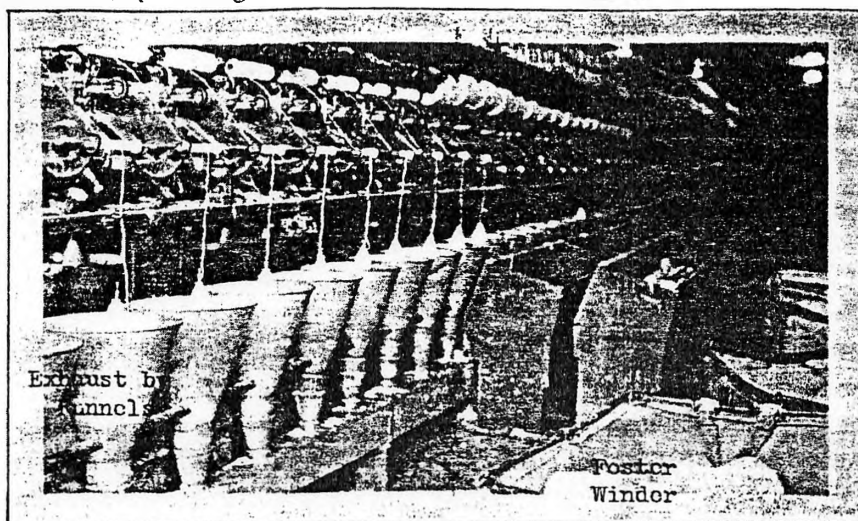
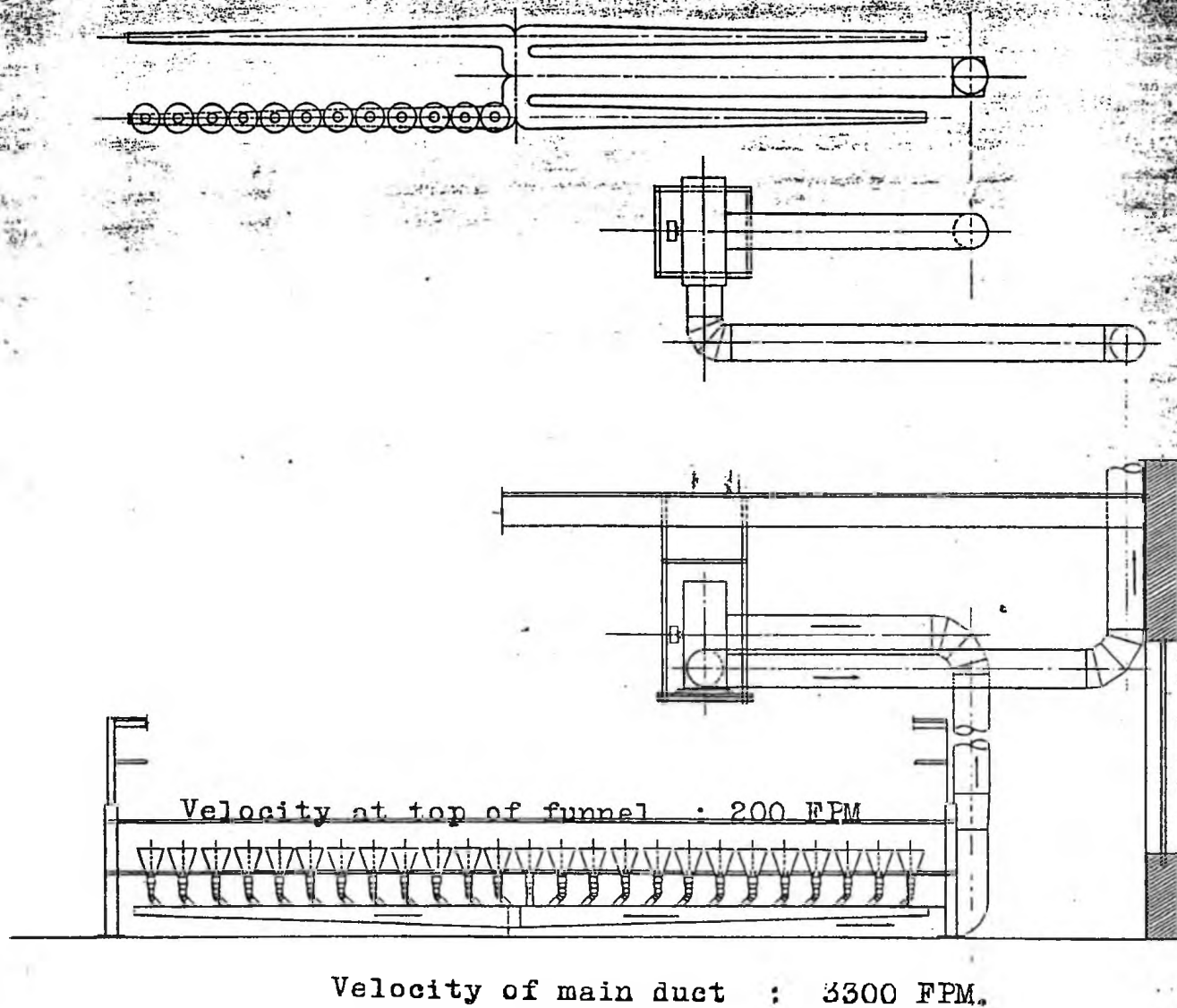


Fig. 12

View of Foster Winder showing exhaust funnels in which cops are set. This is re-winding operation whereby the asbestos yarn passes upward from the cops in funnel to the larger package up on the machine. The air is exhausted downward through the funnel, thereby removing the asbestos dust created from the whirling motion of the lower spindle situated within the funnel.



PLAN OF EXHAUST FOR
FOSTER WINDER

U. S. ASBESTOS COMPANY
Manheim, Pa.
Scale 1/4" = 1'

Fig. 12.

This diagram accompanies the photograph in Fig. 12 to illustrate the ventilation system of a Foster Winder.

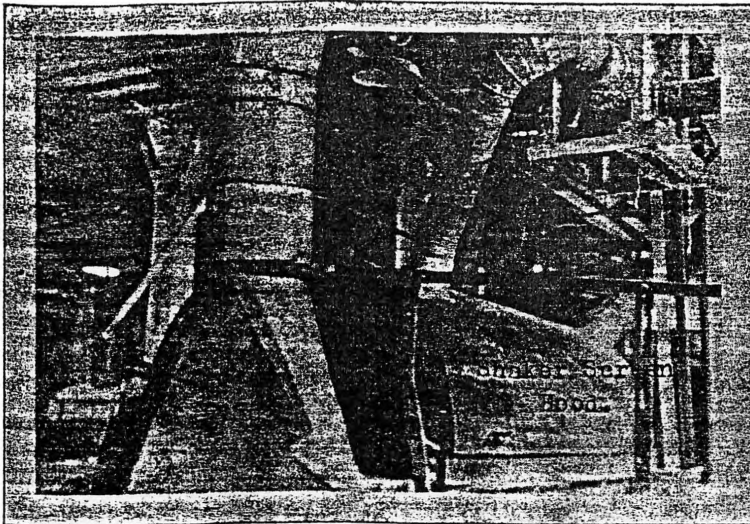


Fig. 14.

Another Preparing Room Operation, showing the Hood and Exhaust over the Shaker Screen:

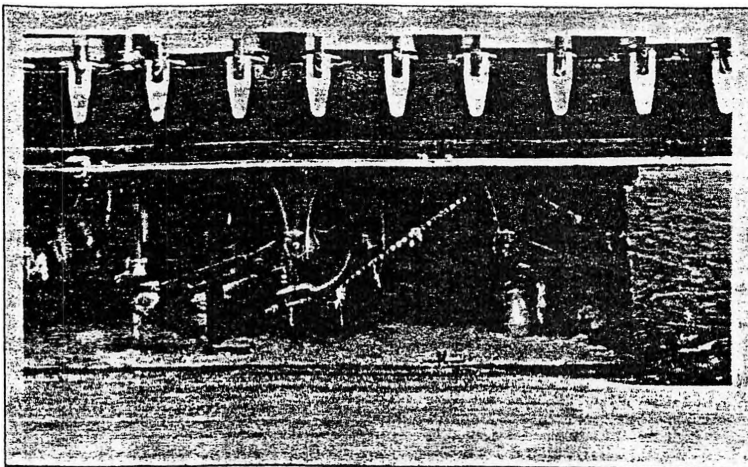


Fig. 15.

This photograph accompanies Fig. 11 and represents the base of the Spinning Frame, with front boards removed to show the ventilation system within.

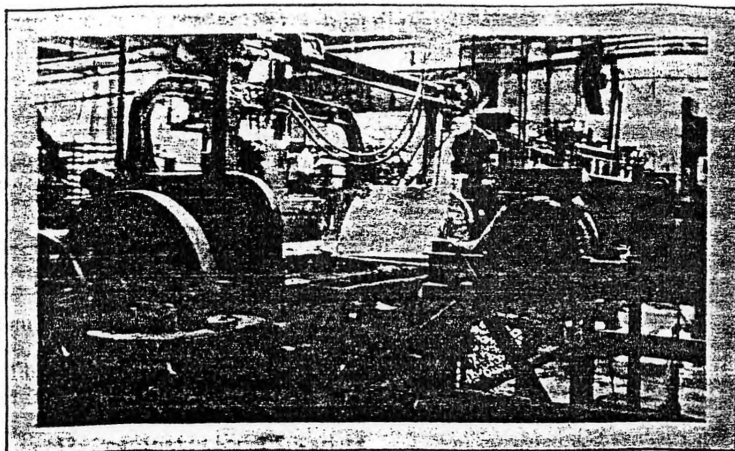
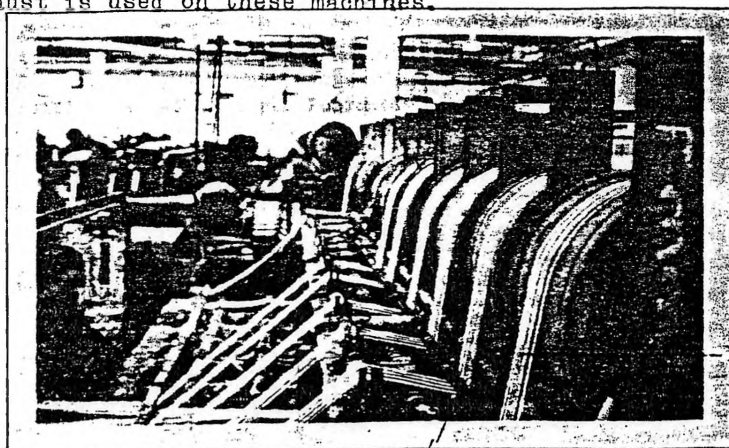


Fig. 16.

Water Spray over Cloth Loom.

Water is applied in varying amounts from 2 to 30% of finished weight of asbestos cloth. This water is added solely to keep down the asbestos dust. The spray device acts in a traverse system across the cloth. No exhaust is used on these machines.



Water Pans.

Fig. 17.

Tape Weaving Loom.

Yarns come down over the circular disc and are led through a pan of water. This operation keeps down the asbestos dust.