

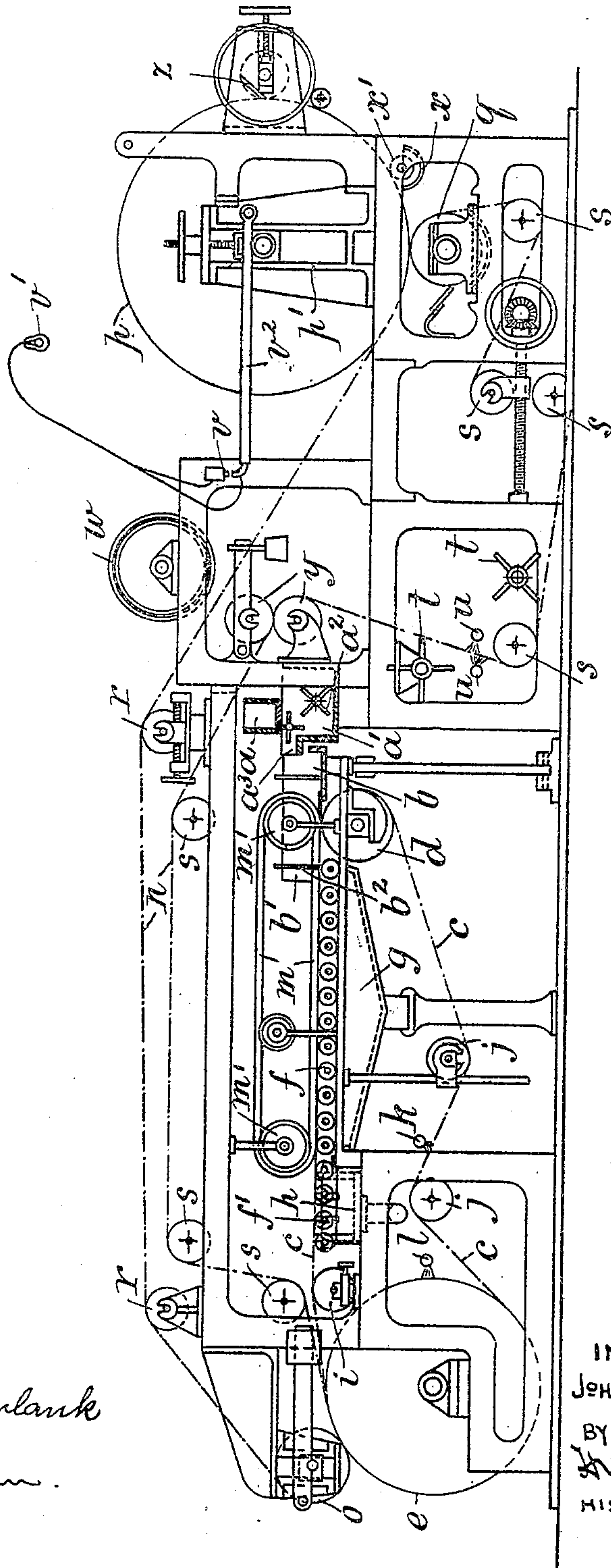
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J. B. WATSON.

APPARATUS FOR THE MANUFACTURE OF FIBROUS FIREPROOF SHEETS.

APPLICATION FILED APR. 12, 1905.



WITNESSES;

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APPARATUS FOR THE MANUFACTURE OF FIBROUS FIREPROOF SHEETS.

No. 800,839.

Specification of Letters Patent.

Patented Oct. 3, 1905.

Application filed April 12, 1905. Serial No. 255,177.

To all whom it may concern:

Be it known that I, JOHN BELL WATSON, a subject of the King of Great Britain and Ireland, and a resident of Shorne, in the county of Kent, England, have invented a certain new and useful Apparatus for the Manufacture of Fibrous Fireproof Sheets, (for which I have filed an application for patent in Great Britain, No. 25,702, dated November 25, 1904;) and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to the manufacture of fibro-cement, asbestos, and other fibrous fireproof sheets built up in layers, and has for its object to expedite the process of manufacture and to render it continuous and automatic.

To this end the invention consists in the improved apparatus used in such process, hereinafter described.

The accompanying drawing represents a sectional elevation of the apparatus.

The process employed consists in supplying the fibro-cement or other fireproof fibrous material in the condition of pulp to a service-box, agitating it therein, discharging it therefrom in a film of regulated depth and width onto an endless traveling wire sheet, traversing the film by such sheet over a draining-trough so as to drain the water therefrom, and over a wire-cloth drum, squeezing the film between the wire-drum and a felt-covered couch-roll so as to further free the film from water, picking up the film from the wire sheet and reversing or turning it over by a superposed endless felt, and traversing it supported by such felt backwardly to a superposed collecting-drum, winding the film around such drum, and compressing it and any preceding layers between the drum and a roll supporting the drum by the weight of the drum, so as to consolidate the successive film layers into a film sheet until the desired thickness of sheet is attained, then severing the sheet and uncurling it from the drum.

The process may be modified by rendering each layer of the fibrous film as wound around the collecting-drum adherent to the next succeeding layer by applying cementitious matter thereto and by feeding wire-cloth, together with the fibrous film, between the collecting-drum and its supporting-roll, so as to become incorporated between the adjacent film layers.

a represents a service-box into which the pulp flows and from which it delivers into a delivery-box a' , having rotary pulp-agitators a^2 and an overflow a^3 .

b is a channel and apron, having rising sides b' and adjustable sluices b^2 , adapted to receive the pulp overflowing from the box a' and to regulate the width and depth of its onflow.

c is an endless sheet of fine wire-cloth which stretches from a breast-roll d to a rotary skeleton wire-cloth-covered drum e , passing over tube-rolls f , supported by the machine-frame above a trough g , and an adjustable leading-roll i , and returning underneath from the drum e to the roll d , being guided and kept taut by leading-rolls j and washed by a hose k , the wire-drum being also washed by a hose l .

f' is a removable set of tube-rolls which may be used interchangeably with a vacuum-box h (indicated in dotted lines) and over which the cloth c may also pass.

m represents endless rubber bands or deckel-straps carried by rollers m' , resting on and traveling with the wire c and serving to prevent the pulp film from spreading.

As the pulp film is traversed by the wire over the tube-rolls sufficient of its water drains through the wire into the trough to enable the fibrous film to cling to the wire.

n is an endless sheet of felt which stretches from a rubber couch-roll o to a breast-roll q and incloses such rolls and returns underneath, passing over and being pressed by the couch-roll o against the wire-drum e and passing under and pressing against a rotary steel collecting-drum p , which rests upon the roll q . The felt in its top motion is guided and kept taut by rolls r , and in its return motion is guided and kept taut by rolls s , and is freed from adhering fibers by being beaten by rotating beaters t and washed with hoses u on both sides, and from water by being passed between squeegee-rolls y , so that it returns to the wire-drum clean.

The pulp film as it passes between the drum e and roll o is further freed from water (which freely escapes through the wire-drum) and is picked up from the wire c by the felt n and is thereby reversed or turned over and carried backwardly over the machine to the collecting-drum, which in turn picks up the film from the felt and collects it in successive layers until the required thickness of sheet has been obtained, each layer being consolidated and incorporated with the preceding layer by the compression effected by the drum p .

w is a roll of wire fabric running freely and from which the fabric may be fed continuously or at intervals onto the pulp film, be-

ing carried by the felt to the collecting-drum, so as to be incorporated between the layers thereof by the compression effected by the drum, so as to strengthen the pulp sheet, if
5 so required.

w is a receptacle containing glue or other adhesive and an adjustable roller w' , by which the adhesive may be applied against the pulp film as it is wound onto the collecting-drum,
10 so as to cause each layer thereof to be rendered adherent to the next succeeding layer, if so required.

The bearings of the journals of the drum p are guided by standards p' , in which they
15 can rise as the drum increases in diameter by the winding of the pulp film thereon and in which they can be raised to lift the drum from the roll q .

v is an electric contact in connection with
20 any suitable indicator v' and adapted to complete an electric circuit upon the desired thickness of film being wound around the drum, the circuit being closed automatically by a pivoted arm v^2 , raised by the drum-bear-
25 ings.

z is a knife which may be operated automatically or by hand upon the closing of the electric circuit v , so as to sever the wound film into a sheet homogeneous and having the de-
30 sired thickness, width, and length and which is opened out and removed from the drum, during which the first ply or film of the succeeding sheet is laid on the drum.

The employment of the traveling wiresheet
35 and of the wire-drum from which the sheet is separate is of advantage in enabling a considerably-increased thickness of film to be floated without liability of the wire-drum getting choked with fiber and a given thickness of
40 film sheet to be attained with less layers of films, thus expediting the manufacture and the wire-drum to be kept clean and free from accumulation of fiber.

What I claim as my invention, and desire
45 to secure by Letters Patent, is—

In apparatus for manufacturing fibro-ce-

ment, asbestos and other fibrous fireproof built-up sheets, in combination, a pulp supply and delivery box having pulp-agitators, a channel and apron adapted to regulate the
50 depth and width of the pulp onflow, a draining-trough arranged ahead of and below the apron, an endless traveling wire sheet stretching from under the apron and serving to traverse the wet film over the draining-trough,
55 the wire sheet returning underneath, a wire-covered drum supporting and rotating with the wire sheet but unconnected thereto, hoses for separately washing the returning wire sheet and the wire-drum, a couch-roll adapted
60 to press the pulp film against the wire-drum, a rotary collecting-drum guided in vertical standards and supported by a breast-roll and serving to wind the film in layers around it and by its weight to consolidate such layers
65 into a homogeneous sheet, an endless felt stretching from said couch-roll and inclosing the same and said breast-roll and returning underneath passing over the wire-drum where its couch-roll presses against it and under the
70 collecting-drum where the breast-roll supports it and serving to pick up the film from the wire sheet and to reverse and traverse it from the wire-drum over the machine to the collecting-drum, beaters, hoses and squeegee-
75 rollers serving to clean the returning felt on both sides, means of indicating when any desired thickness of sheet has been attained, means of applying wire-cloth to the film being fed to the roll, means of applying cemen-
80 titious matter to the film being rolled, and a knife set in opposite relation to the drum-periphery and serving to sever the cylindrical sheet so that it can be uncurled from the drum as a sheet of the required thickness, width and
85 length, as set forth.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JOHN BELL WATSON.

Witnesses:

ANTHONY RICHARD APPLIN,
ERNEST EDWARD WISE.