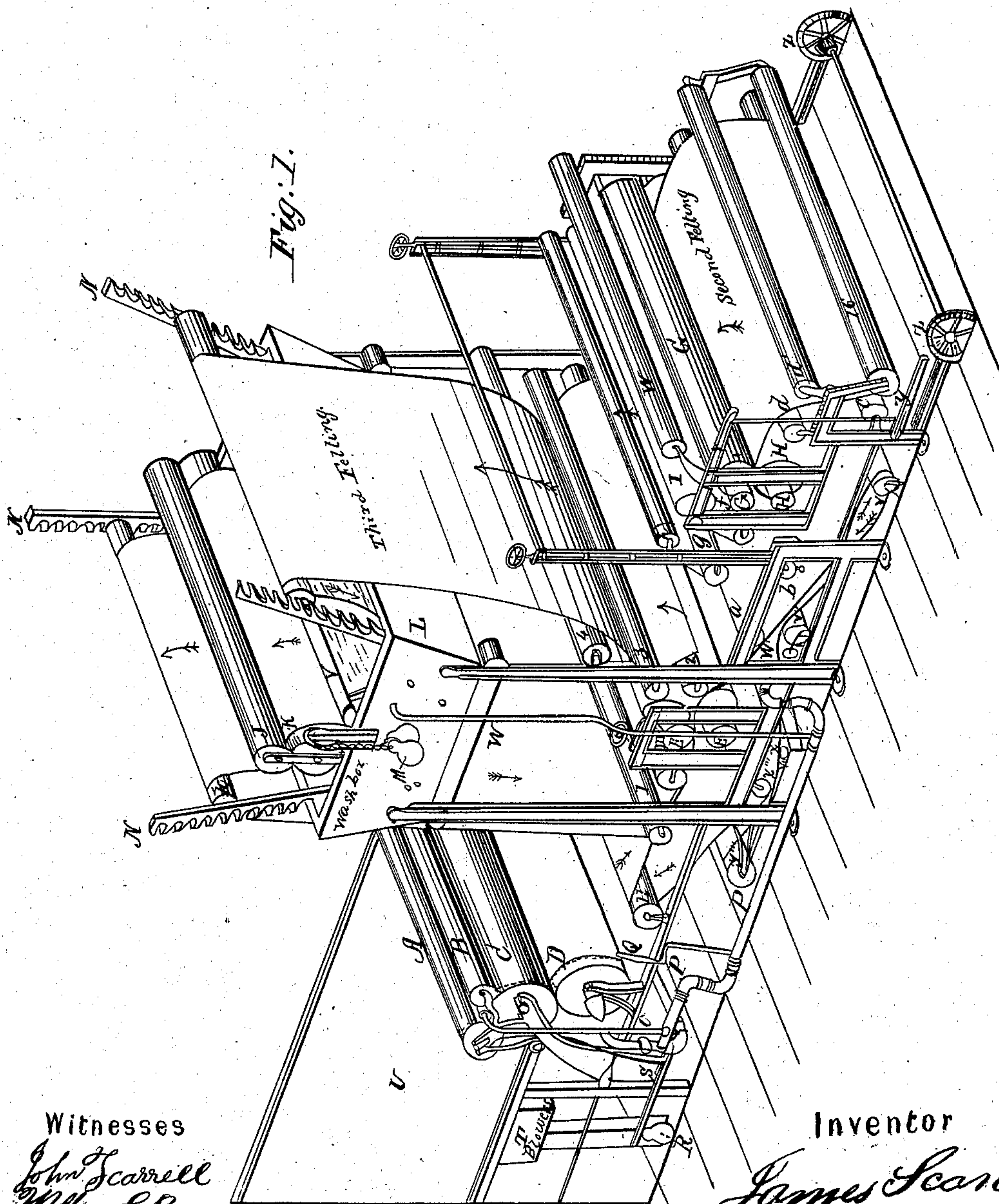


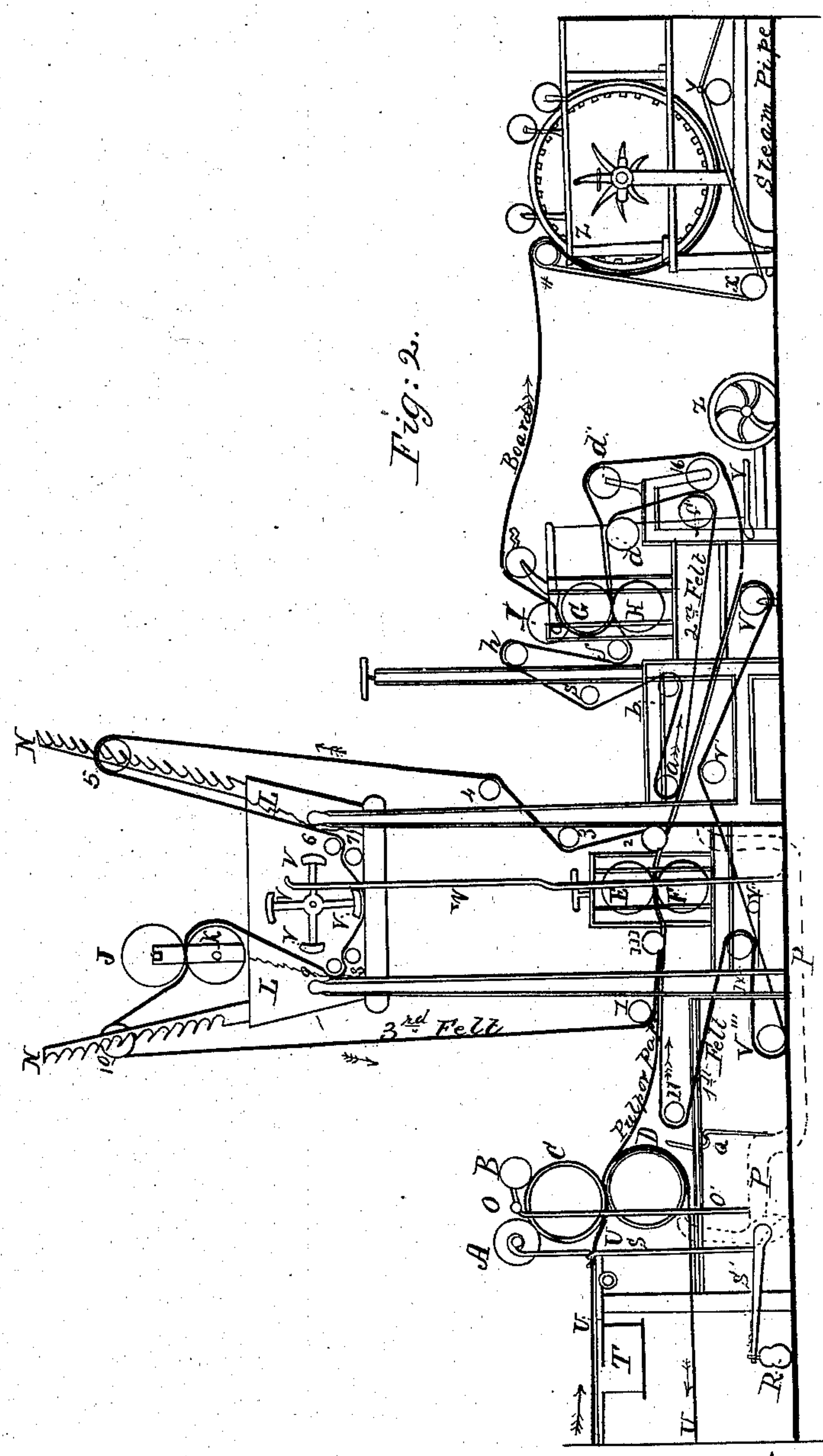
J. Scanlan. Sheet 1. 2 Sheets.
Paper Making Mach.
N^o 48,347. Patented Jun. 20, 1865.



Witnesses
John Scarrell
William S. Bongner

Inventor
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J. Scanlan. Sheet 2 of 2 Sheets.
Paper Making Mach.
N^o 48,347. Patented Jun. 20, 1865.



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UNITED STATES PATENT OFFICE.

JAMES SCANLAN, OF LEBANON, PENNSYLVANIA, ASSIGNOR TO HIMSELF,
S. J. STINE, AND GEORGE ROSS, OF SAME PLACE.

IMPROVEMENT IN PAPER-MAKING MACHINES.

Specification forming part of Letters Patent No. 48,347, dated June 20, 1865.

To all whom it may concern:

Be it known that I, JAMES SCANLAN, of Lebanon, in the county of Lebanon and State of Pennsylvania, have invented new and useful Improvements on Paper-Making Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the machine with my additional improvements in place. Fig. 2 is a longitudinal elevation of the same, with the several beltings employed, the end of the tank and parts of the frame-work shown in Fig. 1 removed, the better to exhibit other parts. In this figure is also shown one of a series of ten steam-cylinders, around which the continuous sheet is carried, dried, and made to pass over to the splitting and cutting machine employed. This, being no part of my invention, is not shown.

The nature of my invention consists in adapting the ordinary Fourdrinier machine to the manufacture of heavy or light paper-boards from straw, sorghum, or other materials, of a superior quality. This I accomplish by means of the following changes and additions to the machinery:

U represents the Fourdrinier wire-cloth around the roller D. Rollers C B and water-pipe O are shown in their usual position. I however do away with the cross-plank rigidly fixed on top to keep the water back, and employ in place thereof a roller marked A. This roller is of the same length (sixty-two inches) of the other rollers, is ten inches in diameter, is placed in the position shown, and effectually prevents the water which issues from the perforated pipe O employed for washing the jacket of roller C from running back upon the pulp. This roller is also self-adjusting by means of a linked rod, S, and lever-arm S' and weight R thereon, the rod being connected with the axis of the roller in its bearing and also with the lever-arm, so as to give it the required amount of pressure and yet adapt itself to the thickness of the jacket on C, and thus lessen-

ing the friction and consequent wear and tear, as was the case when the fixed plank was used, as heretofore, for that purpose, which was so destructive to the jacket, as well as the wire-cloth beneath, by reason of its rigid attachment being unyielding.

My second improvement consists in the introduction of a third felt and washing-trough arrangement, never employed prior to my invention. This third felting does away with the roll-cloths ordinarily used, which are expensive and require constant changing, becoming soon clogged up. Over the first press-rolls, E F, is a water tank or box, L. This has a reel-like washer, with beaters or arms V revolving in the water fed in by the pipe W. There is also a waste-pipe on the opposite side to carry off the pulpy washings. This third felt, after being more or less charged with particles of pulp, which is between it and the first felt, in its passage through between the first press-rollers E F, passes under roller 2, over roller 3, under roller 4, up to roller 5. This latter is supported by and adjustable in the racks N on the corners of the wash-box L. From 5 the felting enters the water within the box, passing between rolls 6 and 7, and is subjected to the beating action of the washer V revolving in the box during its passage between the immersed rolls 8 9, and being thus cleansed and rinsed the felting passes upward through the wringers or rollers J K to the roller 10, which is also supported on a pair of racks, N. The felt thus cleansed and comparatively dry descends to roll 1, where it again covers the compressed pulp as it is fed between the press-rollers F, and performs also the important office of receiving through it the surplus water in the pulp, or allowing the water pressed out of the pulp to pass upward through it and be drained off from its upper surface (where it comes in contact with the roll 3) in a stream on both sides into a trough. (Not shown.) There is also a pulley, m, with a chain and weights, M, on the wash-box L, connected with the washer to regulate its force or pressure upon the felting, as shown in Fig. 1.

The continuous sheet, in its passage from be-

tween the first and second pair of press-rollers, (marked E F and G H,) in the usual manner, on the intervening felting presents, in consequence, a granular surface on the side in contact with the felting. To obviate this defect and to give both sides of the sheet a uniform smooth or polished surface, I introduce an additional metallic press-roller, I, placed above and in contact with the roller G of the ordinary second pair, as shown, between which the sheet is made to pass without the intervention of any felting, and thus receives a finish heretofore not obtained.

These three improvements I deem novel and highly useful. I also introduce a third blower, T, besides other changes in the working of the machinery, which I do not deem sufficiently important to claim as inventions.

My experience in paper and board making is extensive, and I am not aware that paper-boards out of straw or any other material have ever been attempted by the use of the Fourdrinier wire-cloth apron, nor, indeed, can be, without an additional felting and cleansing apparatus arranged and operating substantially as mine. I am aware that a couching-felt is used in combination with the Fourdrinier wire-cloth apron, so arranged as to couch the paper from the wire-cloth by direct contact of the perforated cylinder, which and roller

D support the wire-cloth and couching-felt respectively directly opposite their point of contact; but such, nor a perforated roll combined with the felts where the water is pressed from the web between the rollers and runs on the felts instead of on the web, passing into a perforated roller, I do not claim.

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

1. The couching-roller A, with its lever attachment S S' R, in combination with the Fourdrinier wire-cloth apron U, situated and operating in the manner and for the purpose specified.

2. The third felt in combination with the wash-box L, its washers V, racks N, and rollers 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10, arranged and operating substantially as set forth.

3. The polishing-roller I in the second press in combination with the press-rollers G H.

4. The application of the Fourdrinier machine for making paper-boards out of straw, sorghum, or other materials, in combination with my third felt and felt-washer arrangement, as described.

JAMES SCANLAN.

Witnesses:

JOHN FARRELL,

WILLIAM G. BORGNER.