

C. WHEALEN.
Paper-Machines.

No. 144,172.

Patented Oct. 28, 1873.

FIG. 1.

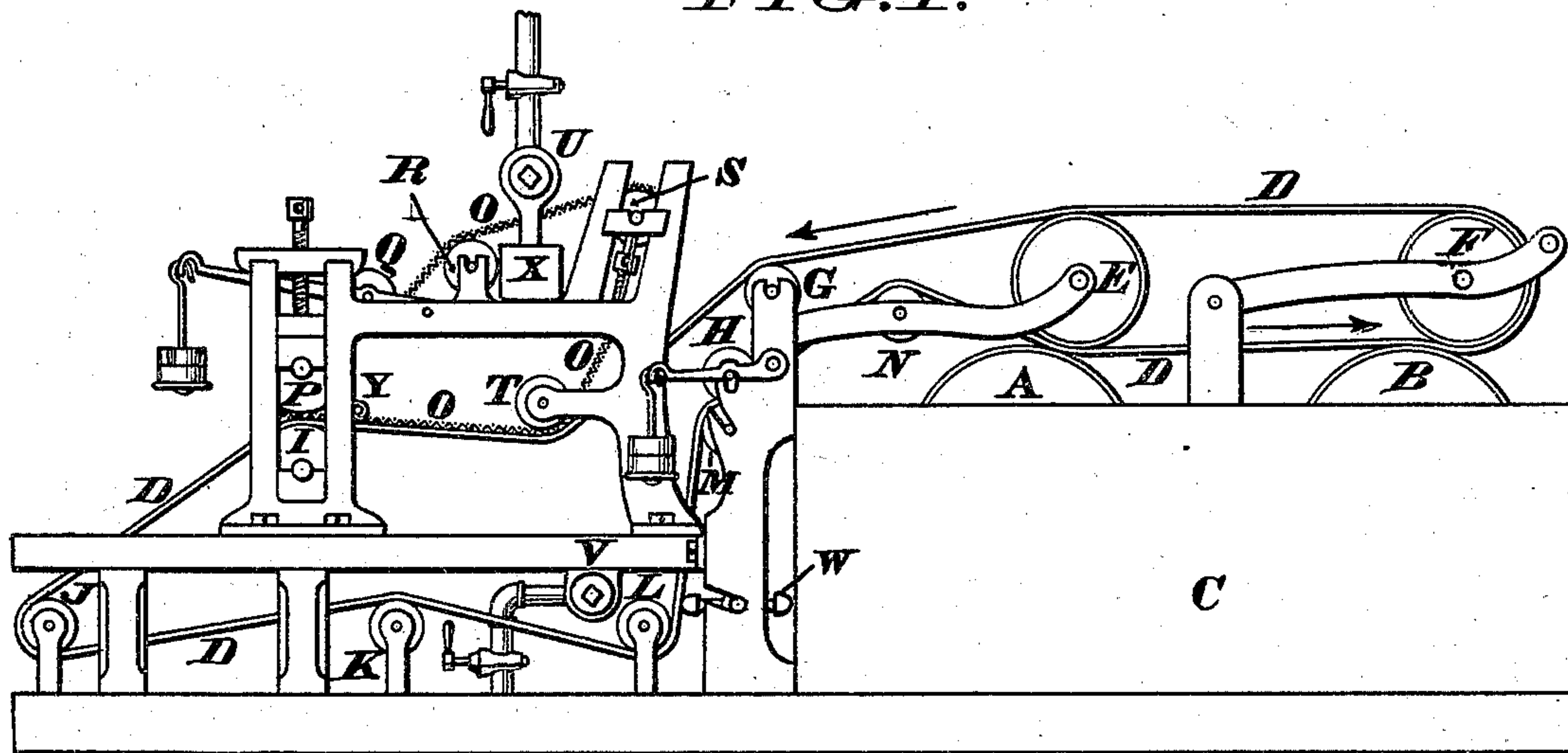
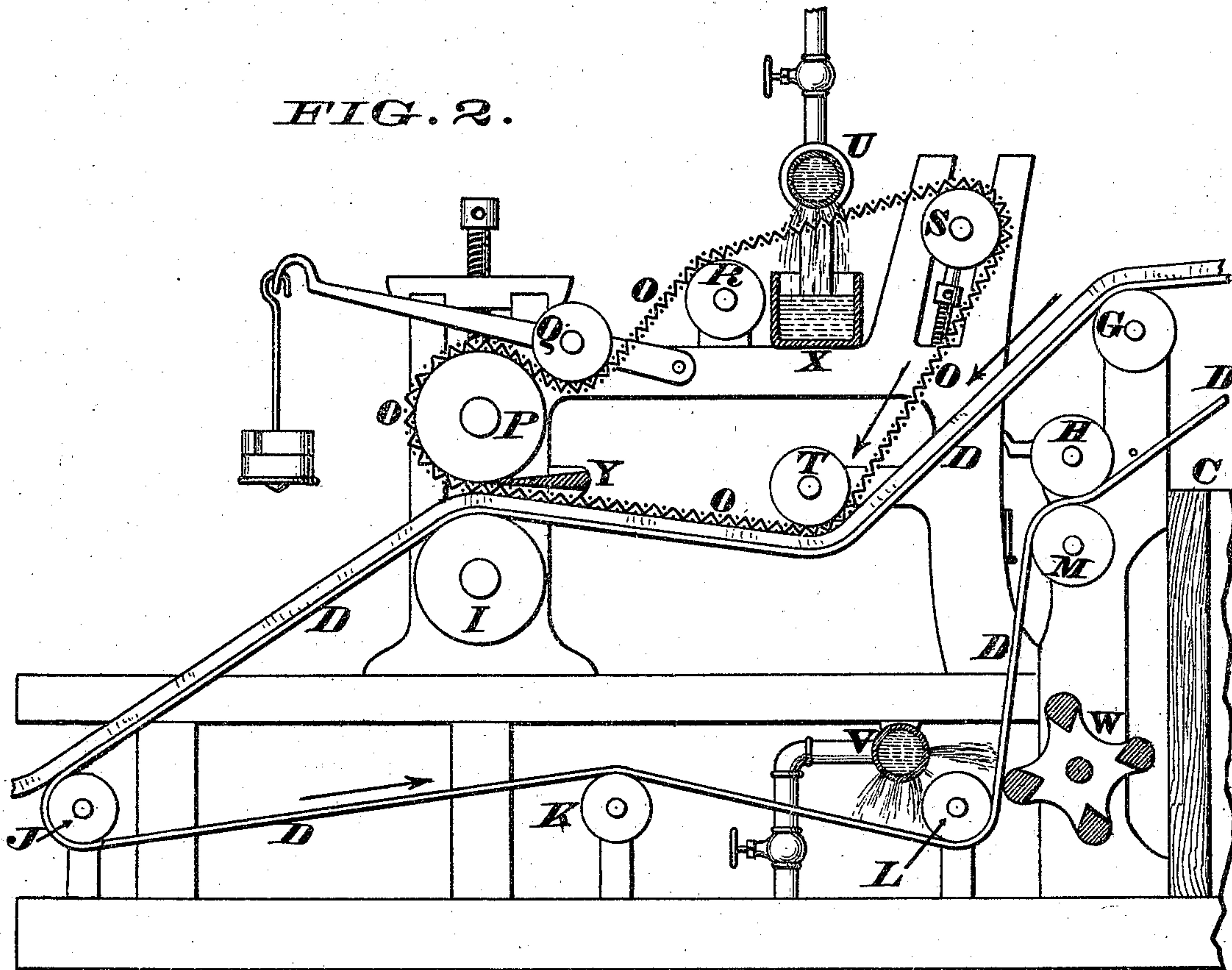


FIG. 2.



Attest.
Wm. H. Layman,
Walter Allen

Charles Whealen
By Knight Bros.
Att'ys.

UNITED STATES PATENT OFFICE.

CHARLES WHEALEN, OF DAYTON, OHIO, ASSIGNOR TO HIMSELF AND
CALVIN L. HAWES.

IMPROVEMENT IN PAPER-MACHINES.

Specification forming part of Letters Patent No. **144,172**, dated October 28, 1873; application filed
September 11, 1873.

To all whom it may concern:

Be it known that I, CHARLES WHEALEN, of Dayton, Montgomery county, Ohio, have invented a new and useful Apparatus for the Manufacture of Thick Paper or Paper-Board, of which the following is a specification:

The nature and objects of the invention are as follows: My invention is an improvement in those paper-forming machines in which a continuous sheet or "board" composed of one, two, or more layers of "pulp" is, by means of an endless blanket, called the "felt," conducted forward between suitable squeezing or expressing rollers or cylinders; and my invention consists in the application, between such felt and the upper squeezing roller or rollers, of an endless apron of wire cloth, which, for a considerable portion of its length, is made to hug or press the sheet of pulp upon the felt at or near the point of delivery, in the manner and for the purposes hereinafter fully explained. My invention further consists in combining, with the aforesaid wire-cloth apron, a deflecting-roller, arranged to impart a reversed bend to said apron, to assist in detaching or loosening fragments of pulp, as well as causing it more tightly to hug the pressing-roller. My invention further consists in a device to carry off the bulk of the water expressed by the rollers and discharge it beyond the edges of the web or felt.

I will describe my invention as adapted for a "two-ply" board.

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a vertical section, on a larger scale, of a portion thereof at and near the point of delivery.

A B are two customary gathering-cylinder or wallowers, partially immersed in a pulp-vat C. A customary woolen "felt" or endless apron, D, is stretched over any suitable couchers, E F, and around suitable rollers and cylinders, such as G H I J K L M N. O is my endless apron of wire cloth, so stretched around rollers P Q R S T as for a portion of its length on the under side thereof to press with intimate contact upon the felt D at and near the place of delivery, and by so doing operate to express moisture from the pulp sheet, and to flatten

and even the same. The roller Q also serves to cause the said wire-cloth apron to hug the cylinder P, and to cleanse the surface of said apron from adhering particles, or loosen said particles by the backward deflection of the wire-cloth apron. Four of the rollers or cylinders of the opposing aprons are arranged in pairs, to wit, H and M, and I and P. Of these the cylinders H and M operate to remove the superfluous moisture from the washed felt before or preparatory to again taking pulp, while the other pair, I and P, operate to squeeze out and remove the superfluous moisture from the formed board or sheet preparatory to delivery of the same. U and V are customary shower-pipes for washing the aprons, the shower-pipe V being aided by a customary whipper, W—an accessory not needed for the wire cloth, and therefore omitted. X is a catch-box or "save-all," of usual form. Y is a "slice" to lead the water of expression off to either side and prevent its running back onto the goods.

It will be seen by the above-described apparatus I am enabled to form a board of one, two, or more plies, according to whether one, two, or more wallowers are employed, using a single felt pulp-carrier in the described connection with an endless wire-cloth expresser, which latter, however, is not a pulp-carrier. By this arrangement I avoid slippage, washing, or crushing of the pulp sheet and disturbance of its proper grain, thickness, and surface, and produce a solid board of remarkably even and uniform finish.

My above-described invention is more especially designed for the production of "straw" and "tar" boards, such as are used in the manufacture of boxes and book-covers; but my invention may be employed in the manufacture of other descriptions of paper and paper-board.

I am aware that a wire-cloth apron has before been used in a paper-machine in such a manner that a web carried underneath the felt will pass between it and the said wire-cloth apron. This, therefore, I do not claim.

My novel combination of the wire-cloth apron with the felt above the same, at or near its delivery end, adapts the said apron to op-

erate with better effect in expressing the water, and leaving the web in a compact state on the felt, upon which it rests. The gravity of the web tends to prevent its clinging to the apron, and its upper surface is left smooth and undisturbed.

I claim as new and of my invention—

1. The wire-cloth apron O, stretched around the upper pressing-roller, P, and rollers S T, in combination with the felt D and lower pressing-roller, I, as and for the purposes shown and described.

2. The weighted deflecting-roller Q, in combination with the apron O and rollers P S T, as shown and described.

3. The shield Y, in combination with the apron O, roller P, and felt D, as set forth.

In testimony of which invention I hereunto set my hand.

CHARLES WHEALEN.

Attest:

GEO. H. KNIGHT,
C. L. HAWES.