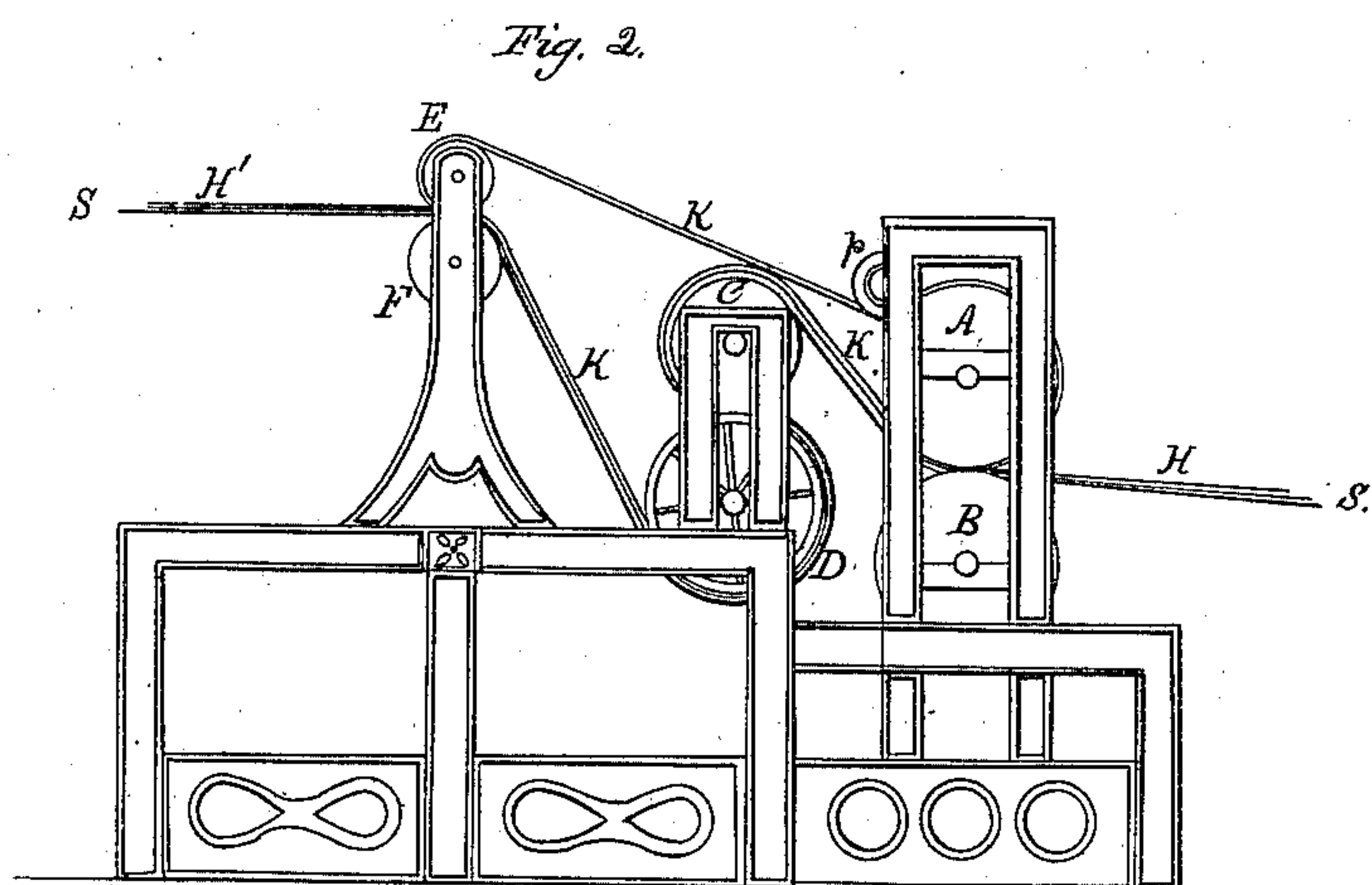
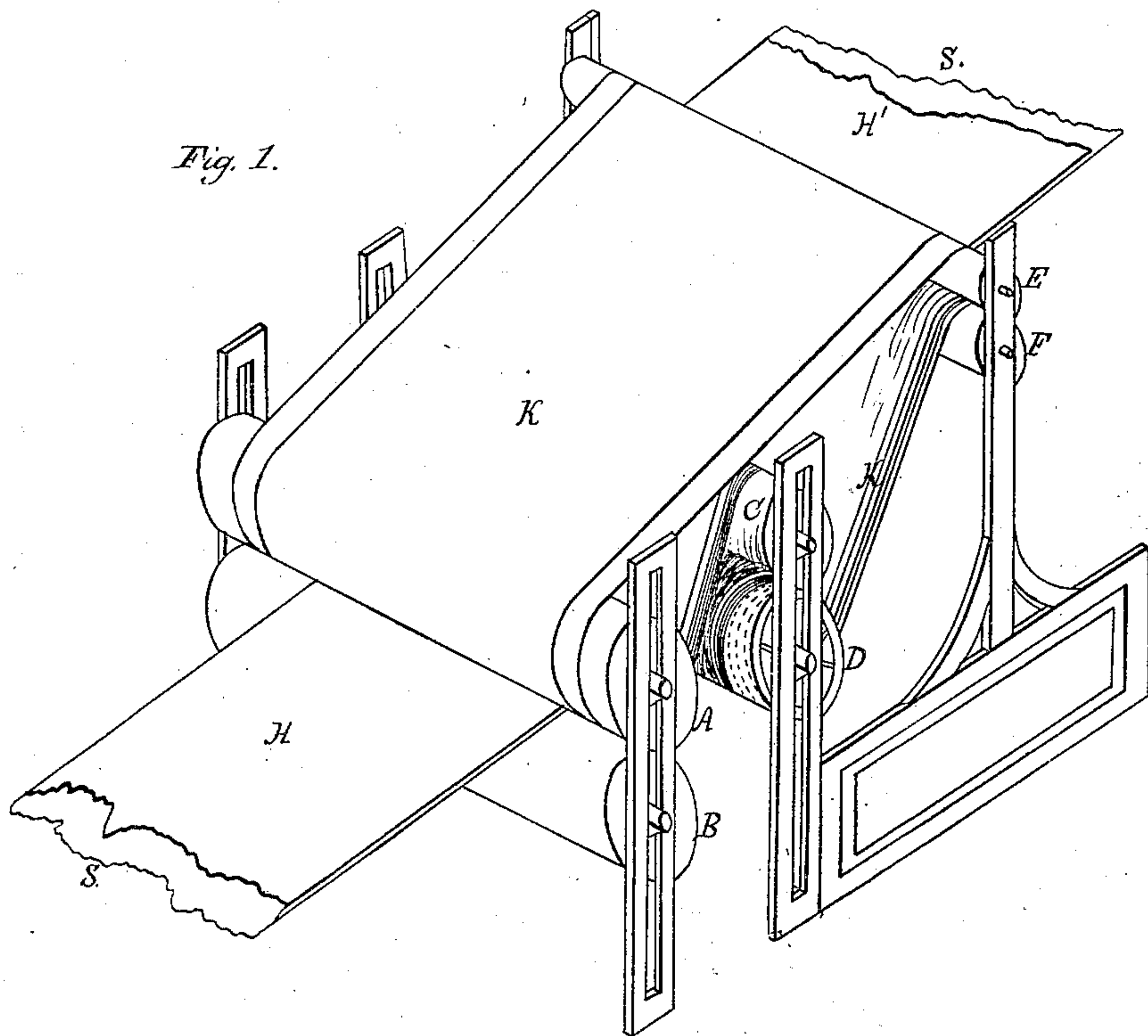


*Wheeler, Dannell & Sharp.*  
*Paper Mach.*

*N<sup>o</sup> 211.*  
*31,215.*

*Patented Jan. 22, 1861.*



*Witnesses.*

*R. L. Cooke*  
*J. M. Wheeler.*

*Inventors.*

*Grant S. Wheeler*  
*George W. Dannell*  
*William Sharp.*

# UNITED STATES PATENT OFFICE.

GRANT J. WHEELER, G. W. DONNELL, AND WM. SHARP, OF BLOOMFIELD, NEW JERSEY,  
ASSIGNORS TO JAMES C. BEACH, OF SAME PLACE.

## PAPER-MAKING MACHINERY.

Specification of Letters Patent No. 31,215, dated January 22, 1861.

*To all whom it may concern:*

Be it known that we, GRANT J. WHEELER, GEORGE W. DONNELL, and WILLIAM SHARP, of Bloomfield, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Press Rolls and Felts for Manufacturing Heavy Paper; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view showing the combination and arrangement together of the press rolls and felts, and Fig. 2 is a perpendicular section or end view of the same.

The same letters indicate like parts in both figures.

The nature and object of our invention is in a more thorough manner than has heretofore been done to express the water from the pulp preparatory to its being passed onto the drying rolls and at the same time to subject it to a just and uniform pressure, thus rendering the paper produced from our press superior in quality as to uniformity, solidity, strength and weight.

In Figs. 1 and 2, A, B, C, D, E, F, are the press rolls, the power being communicated from B. The small roll *p*, shown next to A, in Fig. 2, is introduced simply for the purpose of cleaning and tightening the endless felt K, and is not material to our invention.

H, H', is the pulp, underneath which is the lower felt S, shown by a black line in Figs. 1 and 2, but seen best in Fig. 2, and extending from H', to H, through the whole distance of the press, the said felt S, being the same, except as to its arrangement, as heretofore described, as is used in all ordinary cylinder machines. The pulp, as shown in the drawings, enters the press rolls at H', being drawn between and by the felts K, and S, through the rolls, by the power at press roll B.

The roll D, is hollow, having its periphery perforated as shown in Fig. 1.

The main felt S, underlying H, H', enters between the press rolls E, and F, in the ordinary manner and passes down and under-

neath the perforated roll D, wrapping tightly the roll D, thence passing backward between the rolls C, and D, and over the roll C, thence through or between the rolls A, and B.

K, is an endless felt lying on the top of the pulp H, H', and passing between the press rolls in the same manner as the main felt S, already described, and which when issuing from between the rolls A, and B, returns over the rolls A, and E, in continuation of its circuit.

By means of the arrangement and combination described, we are enabled to press the water from a much heavier web of pulp, without crushing it, than can be accomplished by the ordinary process. This result we attain by the use of the perforated roll D, and the felt wrapping the same, which cause the water pressed from the web at the point of pressure, between C, and D, to run off on the felts instead of pressing back on the web as in the old process, and the felts, drawing the pulp tightly on the perforated roll, cause during the whole distance of pressure the water to pass into the perforated roll D. The endless felt K, running on the top of the web (thus running the web between two felts) prevents the water pressed from the web from washing the pulp as it passes between the press rolls owing to the water being pressed through the felt, and thence running off at either end, thus fully protecting the web.

The endless felt K, may be formed of felt, wire cloth or other equivalent and suitable material.

What we claim as new and of our own invention and desire to secure by Letters Patent of the United States is—

The use in press rolls of the perforated roll D, in combination with the felts K, and S, which carry the pulp between them, substantially in the manner and for the purposes described.

GRANT J. WHEELER.  
GEORGE W. DONNELL.  
WILLIAM SHARP.

Witnesses:

R. L. COOKE,  
J. M. WHEELER.