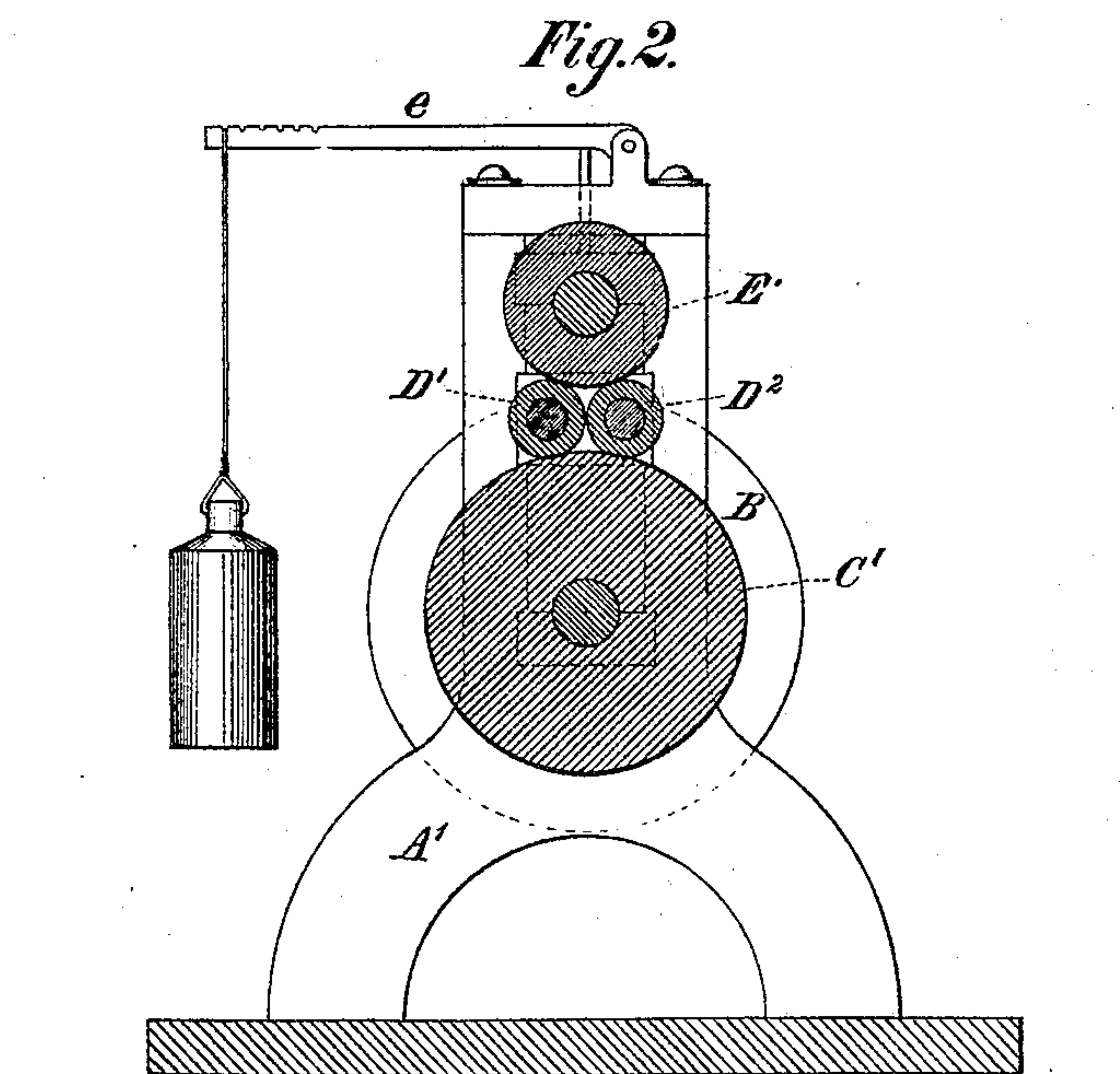
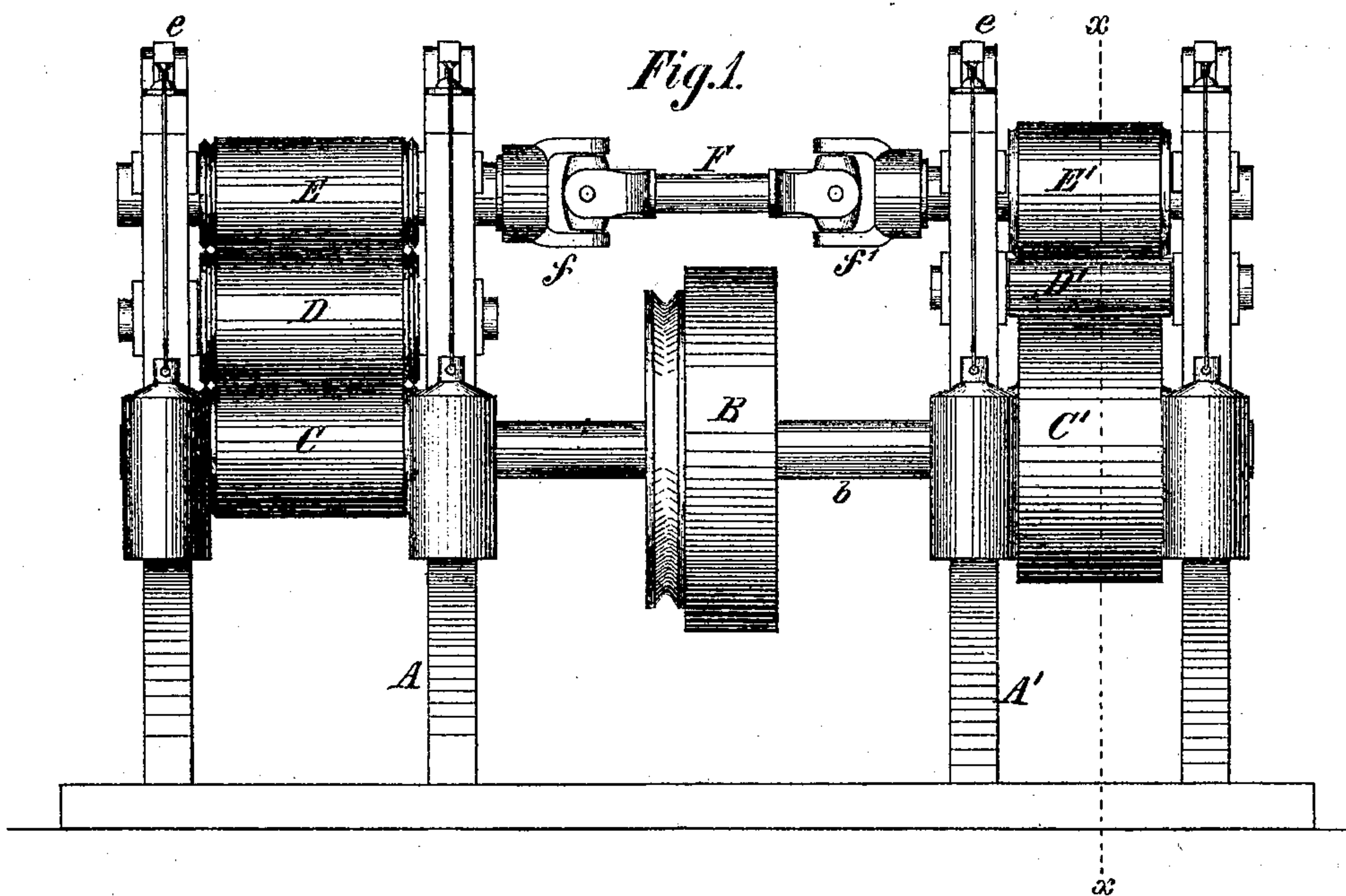


Soley & Stites,
Paper Calendaring.
No. 101,532. Patented. April 5, 1870.



Witnesses.
J. Snowden Bell.

Wm. H. Soley } *by their atty*
Geo. Stites } *Wm. D. Baldwin*

United States Patent Office.

WILLIAM H. SOLEY AND GEORGE STITES, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 101,532, dated April 5, 1870.

IMPROVEMENT IN FRICTION CALENDER ROLLS FOR PAPER.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, WILLIAM H. SOLEY and GEORGE STITES, both of the city and county of Philadelphia in the State of Pennsylvania, have invented a new and useful Improvement in Friction Calenders for Calendering Paper, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings which make part of this specification, and in which—

Figure 1 is a view in elevation of our improved machine, and

Figure 2, a vertical transverse section of the same at the line xx of fig. 1.

Our invention relates to that class of calendering machines in which the rollers are driven by frictional contact; and

Its object is so to combine with a set of calendering-rolls, a set of driving-rolls, of different diameters, that the planishing-roll may be driven by frictional contact, through the rolls of the other set, and move at a speed different from that due to its relation to the rolls of its own set.

In the accompanying drawings two sets of rolls are shown as mounted in suitable housings $A A'$, and arranged end to end.

Power is communicated, from any suitable prime mover, to a pulley, B , mounted on a shaft, b , which carries two rolls $O C'$ of different diameters, mounted in suitable bearings in the housings $A A'$; these rolls are by preference made of chilled cast-iron.

A roll, D , of hard paper, by preference, is mounted in the housings A above, and in contact with the roll C , and two similar rolls, $D^1 D^2$, in the same horizontal plane, are mounted in the housings A' , above the roll C' .

A single roll may be substituted for the two rolls $D^1 D^2$, but we find the use of two rolls more advantageous in insuring proper frictional contact.

A planishing-roll, E , by preference of chilled iron, is mounted in movable journal-boxes in the housings A , so as to permit it to adjust itself to the thickness of the sheet passing between it and the roll D , and is pressed down upon the roll D by weighted levers e , or screws, and a driven roll, E' , is similarly mounted in the housings A' , above the paper rolls $D^1 D^2$.

The planishing-roll E and the driven roll E' are

connected through a coupling-shaft, F , and universal joints $f f'$, so that the two rolls $E E'$ will revolve together.

By reason of the greater ratio of difference in diameters of the rolls O' and E' , as compared with that of the rolls C and E , the intermediate paper-rolls $D^1 D^2$, acting merely to insure sufficient friction to drive the roll E' , and also to drive it in the same direction as the lower roll C' , we are enabled to drive the planishing-roll E by frictional contact at a higher speed than that due to its frictional contact with the roll D , thereby obtaining a differential motion, which we require for the more perfect calendering of the paper, in a three-roll calender, between the planishing-roll E and paper-roll D .

If the roll E is released from frictional contact with the rolls $D^1 D^2$ by relaxing or removing the weights from its levers, the planishing-roll E would be driven by its frictional contact with the roll D , and revolve at a nearly uniform speed therewith, as in the ordinary way.

By means of the universal joints $f f'$, in the coupling-shaft F , we compensate for any difference in the axial planes of the two rolls, caused either by their difference in diameter, or by the wearing of the rolls, or by the working of the housings, &c.

We do not broadly claim calendering rolls of metal and paper.

We claim as our invention—

1. The combination of a set of calendering-rolls, a set of driving-rolls in separate housings, and a universal joint connection between the upper rolls, substantially as and for the purpose set forth.

2. The combination of the driving-shaft, driving-rolls, paper-rolls, planishing-roll, driven roll, and jointed coupling shaft, all these parts being constructed to operate substantially as hereinbefore set forth.

In testimony whereof we have hereunto subscribed our names.

WM. H. SOLEY.
GEORGE STITES.

Witnesses:

J. SNOWDEN BELL,
WM. B. DAYTON.