A. M. MEINCKE.

METHOD AND MEANS OF TREATING PAPER.

APPLICATION FILED JUNE 14, 1907.

916,469.

Patented Mar. 30, 1909

2 SHEETS—SHEET 1.

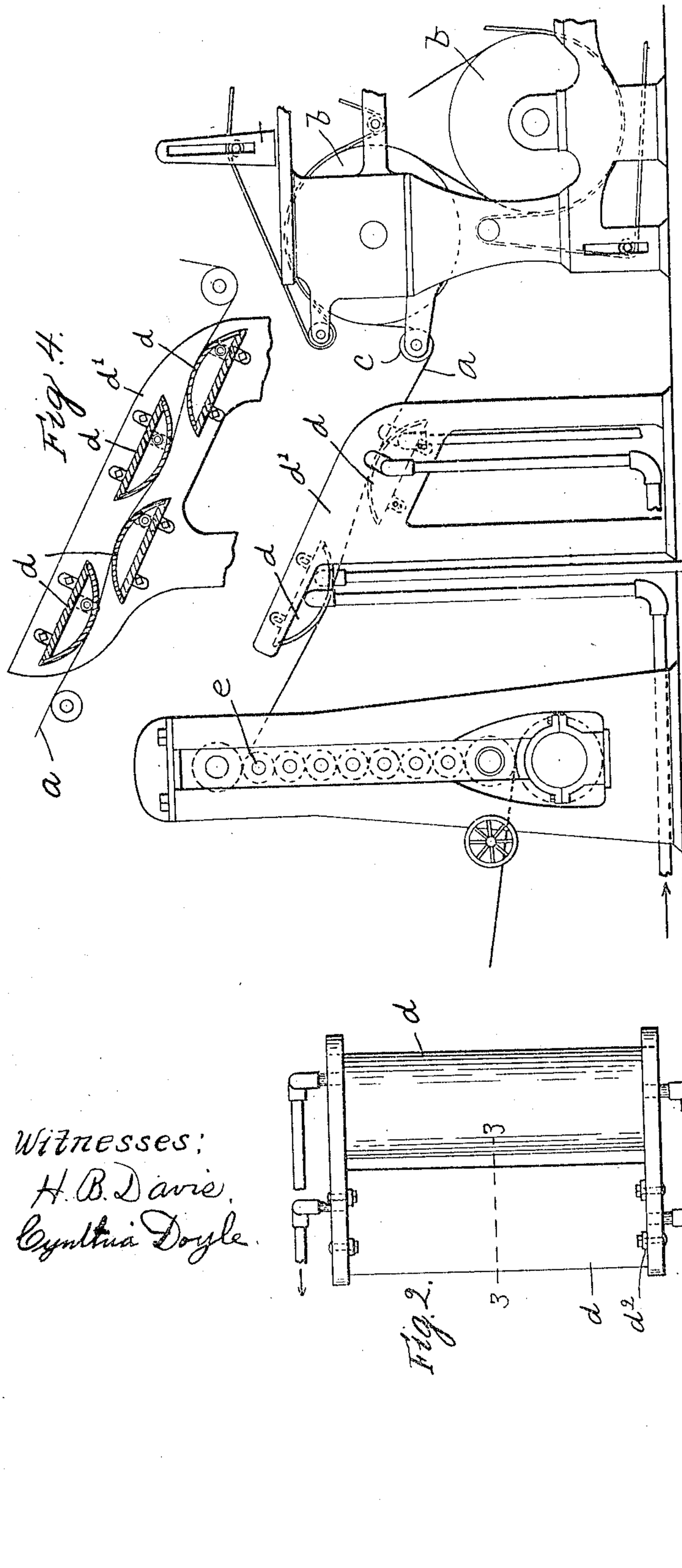

Fig. 1.

Fig. 4.

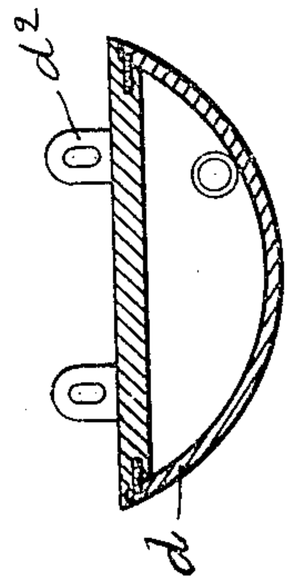

Fig. 3.

Fig. 2.

Witnesses:
H. B. Davie.
Cynthia Doyle.

Inventor:
Alfred M. Meincke
by Mayo & Harriman
Attys.

A. M. MEINCKE.

METHOD AND MEANS OF TREATING PAPER.

APPLICATION FILED JUNE 14, 1907.

916,469.

Patented Mar. 30, 1909.

2 SHEETS—SHEET 2.

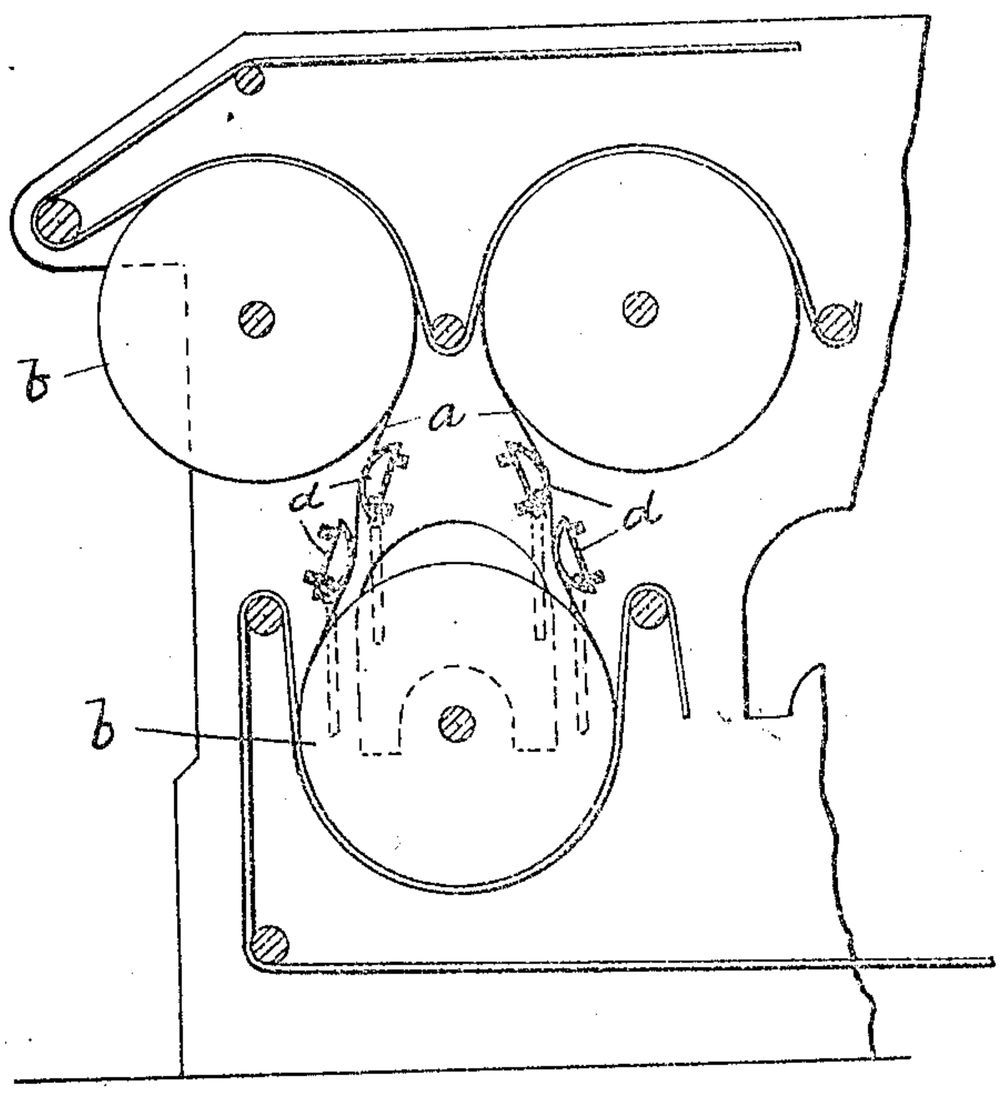

Fig. 5.

Witnesses:
H. B. Davis,
Cynthia Doyle.

Inventor;
Alfred M. Meincke
by Hayes & Hammon
Attys.

UNITED STATES PATENT OFFICE.

ALFRED M. MEINCKE, OF WINCHESTER, MASSACHUSETTS, ASSIGNOR TO THAXTER N. TRIPP, TRUSTEE, OF LYNN, MASSACHUSETTS.

METHOD AND MEANS OF TREATING PAPER.

No. 916,469. Specification of Letters Patent. Patented March 30, 1909.

Application filed June 14, 1907. Serial No. 379,031.

To all whom it may concern:

Be it known that I, ALFRED M. MEINCKE, of Winchester, county of Middlesex, State of Massachusetts, have invented an Improvement in Methods and Means of Treating Paper, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

In the art of making paper by means of the usual paper making machines, the web is formed, then dried and calendered, the calender rolls acting upon the web after it leaves the drying cylinders.

This invention has for its object to interpose between the drying cylinders and the calender of a paper-making machine or between the drying cylinders thereof, suitable ironing devices, which act to lay down the surface fibers, first on one side and then on the other side of the web, without substantially compressing the web, before it enters the calender, the web, at such time, not being thoroughly dry. The fibers are laid down and pointed in a direction opposite to the direction of movement of the web. The web, having its surface fibers thus laid down, is in much better condition to be engaged and acted upon by the calender rolls and by said rolls to be substantially compressed.

The invention also has for its object that improvement in the art of paper making which consists in laying down the fibers on the surface of the web, without substantially compressing it, and subsequently substantially compressing the web having its surface fibers thus laid down.

Figure 1 shows in side elevation means embodying this invention for laying down the fibers on the opposite sides of a web. Fig. 2 is a plan view of the ironing-devices shown in Fig. 1. Fig. 3 is an enlarged transverse section of one of the ironing drums shown in Fig. 2, taken on the dotted line 3—3. Fig. 4 is a modification showing more than one pair of ironing-devices. Fig. 5 is a modification showing the ironing-devices located between the drying cylinders.

As shown in Fig. 1, the web *a*, on leaving the drying cylinders *b*, passes under a roll *c*, idle or positively driven, and then engages the ironing-devices *d*, *d*, whereby it is ironed first on one side and then on the other, and then passes to the calender *e*, which latter is of any usual or suitable construction and adapted to be operated in any usual or suitable manner. The ironing-devices may, however, be otherwise arranged adjacent to the drying-cylinders, as for instance, in Fig. 5, they are shown as located between the drying-cylinders.

The ironing devices *d*, *d*, for the web, as herein shown, consist of hollow drums formed or provided with curved web-engaging surfaces over which the web is drawn. The drums may be heated by steam or otherwise, as for instance, steam pipes may be connected to the drums to deliver steam thereto. These drums are arranged at opposite sides of the web and so disposed relative thereto as to deflect the web. But little deflection will be required to accomplish very efficient results. As herein shown, the drums are arranged at different elevations and in such manner that the web is deflected in opposite ways. The drums *d* are adjustably connected to their end supports *d'*, whereby they may be adjusted with respect to the web to deflect it more or less, as for instance, they may be provided with slotted ears d^2, through which bolts pass which connect the drums with their supports. Furthermore, as shown, in Fig. 1, two drums are provided, yet so far as this invention is concerned any other number may be provided, as for instance, in Fig. 4, four drums are shown. The drums may be arranged in any suitable manner, it only being necessary that they shall be disposed with respect to the web so as to deflect it, in order that the web may be drawn over them for the purpose of ironing it. By the arrangement herein shown, the web is ironed first on one side and then on the other and finally after leaving the ironing-devices passes to the calender, or as shown in Fig. 5, to other drying cylinders. The web may be drawn over the ironing-devices by the calender rolls, which will act to hold it taut, in engagement with the ironing-devices, and to feed it and also to calender it while it is being thus fed along, or it may be otherwise held taut and drawn over said ironing-devices. It will be observed that as the web is not thoroughly dry when acted upon by the ironing-devices, such devices will act to lay down the fibers on the surface of the web, pointing them in a direction opposite to the direction of movement

of the web, without substantially compressing the web, so that when the web is subsequently presented to the calender rolls all the surface fibers will have been laid down, and when subsequently substantially compressed by the calender rolls, a better finish will be produced.

As the ironing drums are heated they will act to further dry the web as the latter is drawn over them, and hence they will serve as supplementary drying-devices for the web, and in some instances such supplementary drying-devices are of great importance regardless of the function of ironing the paper.

I am aware that a web has been passed between heated smoothing-rollers having brightly polished surfaces held in contact with each other; but such rollers operate to compress the web between them and by so doing to lay down the fibres; whereas the ironing-devices, herein shown, operate to lay down the fibers on the surfaces of the web without substantially compressing it.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. The herein described improvement in the art of making paper, which consists in laying down the fibers on the surface of the partially dried but uncalendered web, without substantially compressing it.

2. The herein described improvement in the art of making paper, which consists in laying down the fibers on the surface of the partially dried but uncalendered web, first on one side and then on the other, without substantially compressing it.

3. The herein described improvement in the art of making paper which consists in laying down the fibers on the surface of the partially dried web, without substantially compressing it, and subsequently substantially compressing the web having its surface fibers thus laid down, substantially as described.

4. The herein described improvement in the art of making paper which consists in laying down the fibers first on one side and then on the other side of the partially dried web, without substantially compressing it, and subsequently substantially compressing the web having the fibers on its surface thus laid down, substantially as described.

5. In a paper making machine, an ironing-device located adjacent to the drying-cylinders, having a curved web engaging surface and means for holding the web taut and for drawing it over the web-engaging surface of said device, substantially as described.

6. In a paper making machine, two ironing-devices, located adjacent to the drying cylinders, and disposed at opposite sides of the web, each having a curved web-engaging surface, and means for holding the web taut and for drawing it over the web-engaging surfaces of said devices, substantially as described.

7. In a paper making machine, an ironing-device, located adjacent to the drying cylinders, and having a curved web-engaging surface over which the web is drawn, combined with calender rolls for holding the web taut and for subsequently calendering the ironed web, substantially as described.

8. In a paper making machine, two ironing-devices, located adjacent to the drying cylinders, and disposed at opposite sides of the web, each having a curved web-engaging surface over which the web is drawn, combined with calender rolls for holding the web taut and for subsequently calendering the ironed web, substantially as described.

9. In a paper making machine, an ironing-device located adjacent to the drying cylinders and having a curved web-engaging surface, combined with calender rolls for holding the web taut and for drawing it over the web-engaging surface of said device and for calendering the ironed web, substantially as described.

10. In a paper making machine, two ironing-devices located adjacent to the drying cylinders, and disposed at opposite sides of the web, each having a curved web-engaging surface, combined with calender rolls for holding the web taut and for drawing it over the web-engaging surfaces of said devices and for calendering the ironed web, substantially as described.

11. In a paper making machine, a stationary heated drum, located adjacent to the drying cylinders, having a curved web-engaging surface, and means for holding the web taut and for drawing it over the web-engaging surface of said drum, substantially as described.

12. In a paper making machine, two stationary heated drums, located adjacent to the drying cylinders, and disposed at opposite sides of the web, each having a curved web-engaging surface and means for holding the web taut and for drawing it over the web-engaging surface of said drums, substantially as described.

13. In a paper making machine, an ironing-device located adjacent to the drying cylinders having a curved web-engaging surface, means for adjustably supporting said ironing-device whereby the deflection of the web may be varied and means for holding the web taut and for drawing it over the web-engaging surface of said device, substantially as described.

14. In a paper making machine, two ironing-devices located adjacent to the drying cylinders, and disposed at opposite sides of the web, each having a curved web-engaging

surface, means for adjustably supporting said ironing-devices whereby the deflection of the web may be varied, and means for holding the web taut and for drawing it over the web-engaging surfaces of said devices, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALFRED M. MEINCKE.

Witnesses:
H. B. DAVIS,
CYNTHIA DOYLE.