

No. 842,890.

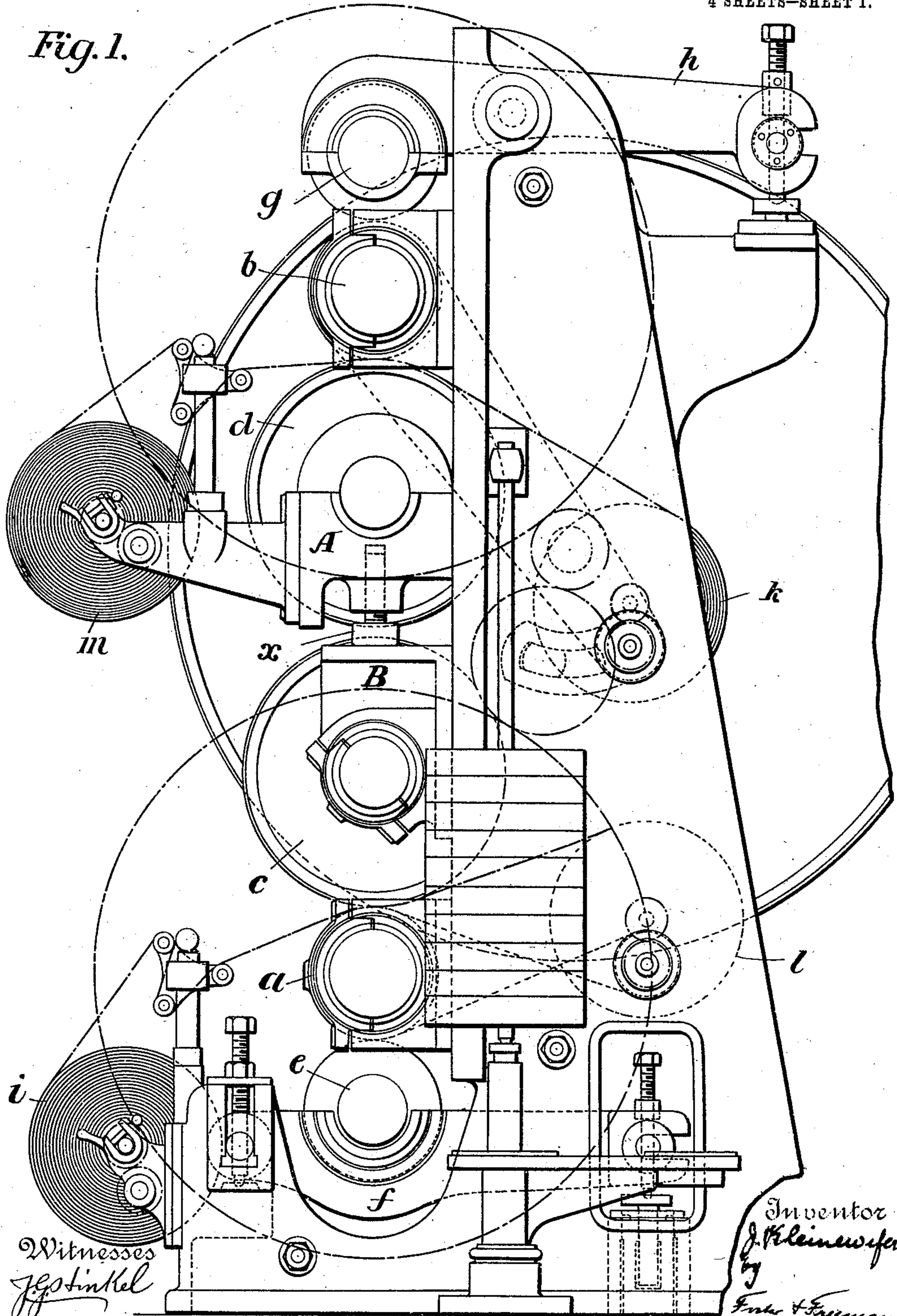
PATENTED FEB. 5, 1907.

J. KLEINWEFERS.
CALENDER ROLLERS FOR PRODUCING EMBOSSED OR RAISED PATTERNS.

APPLICATION FILED AUG. 2, 1901.

4 SHEETS—SHEET 1.

Fig. 1.



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4 SHEETS—SHEET 2.

Fig. 3.

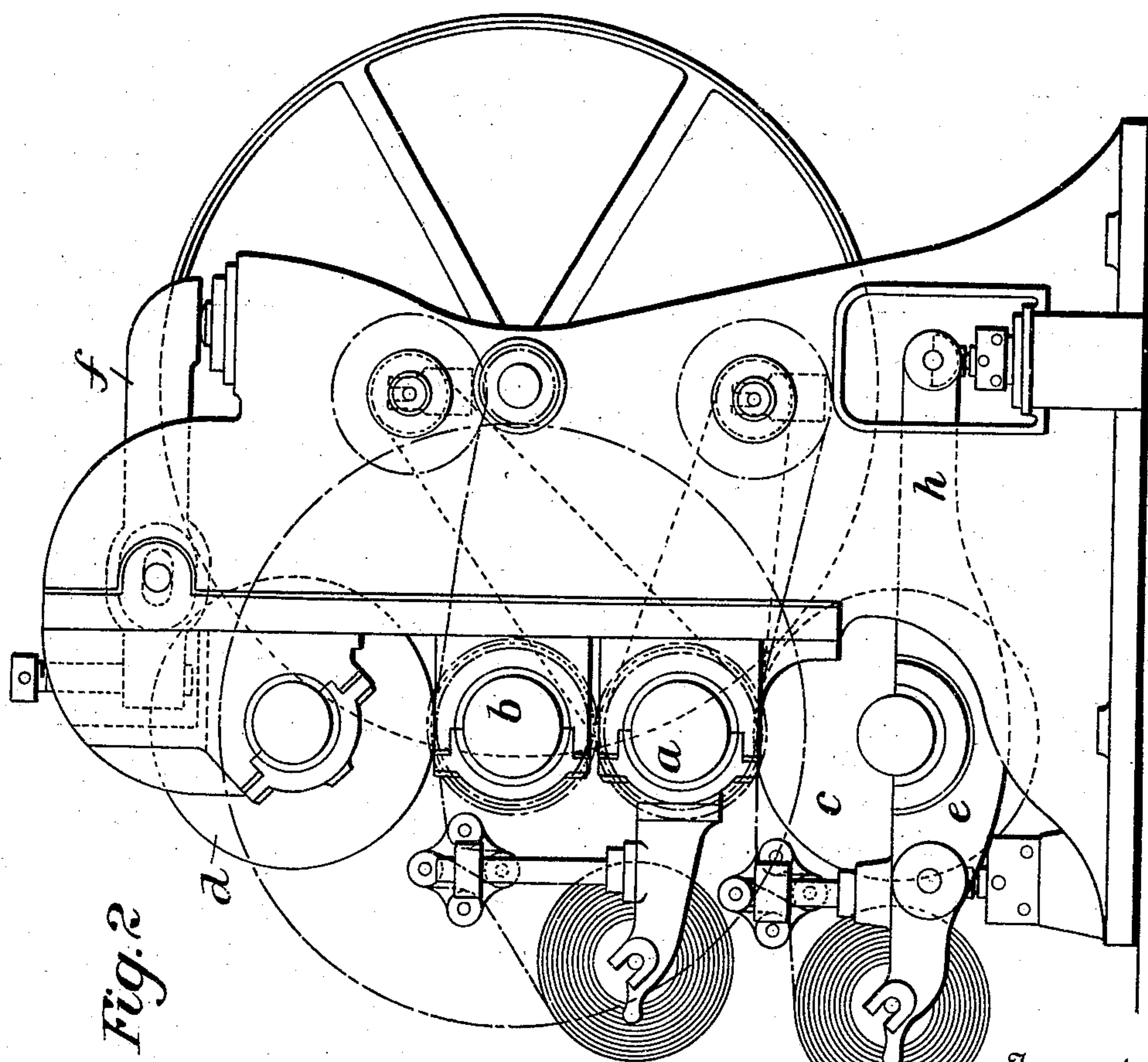
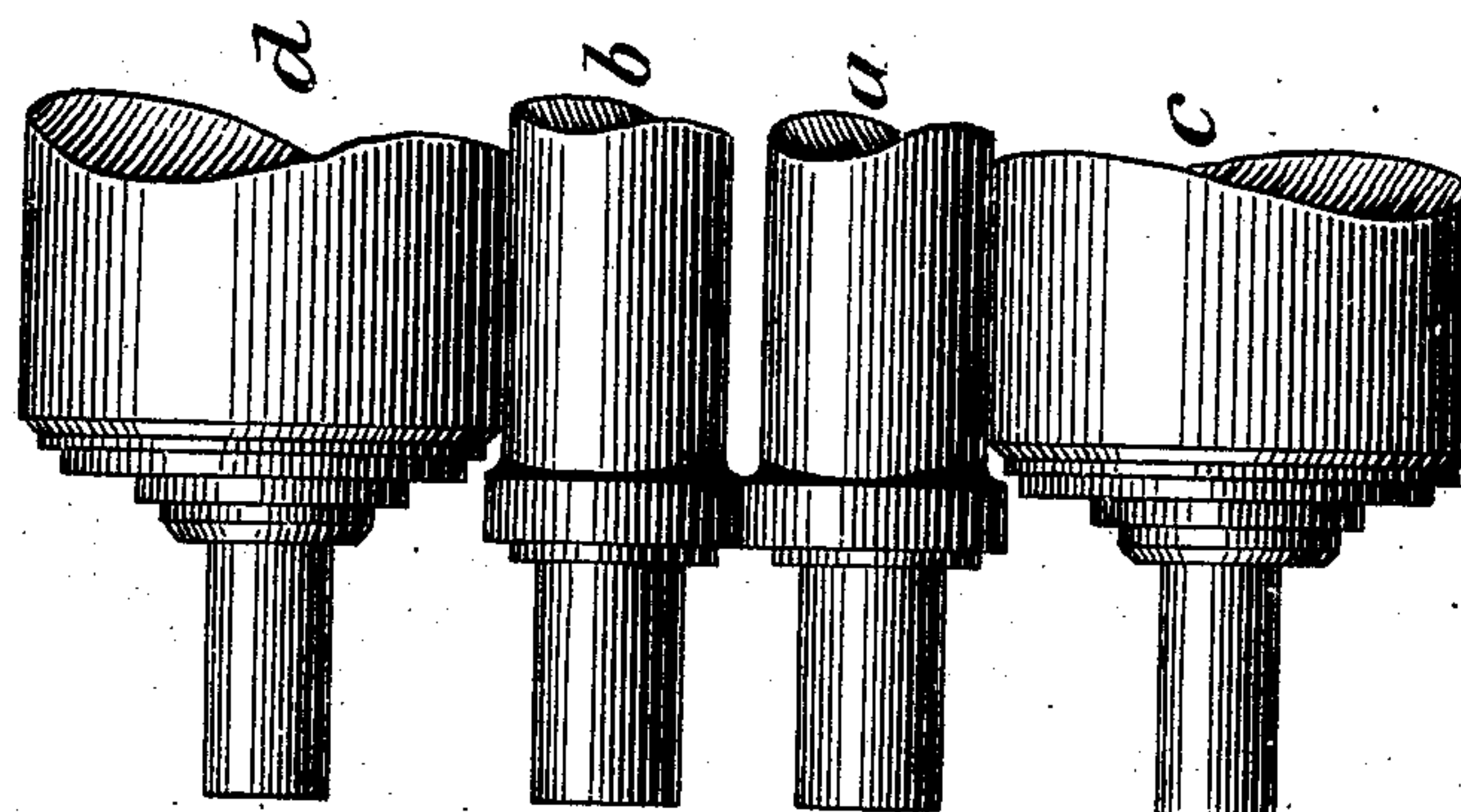


Fig. 2

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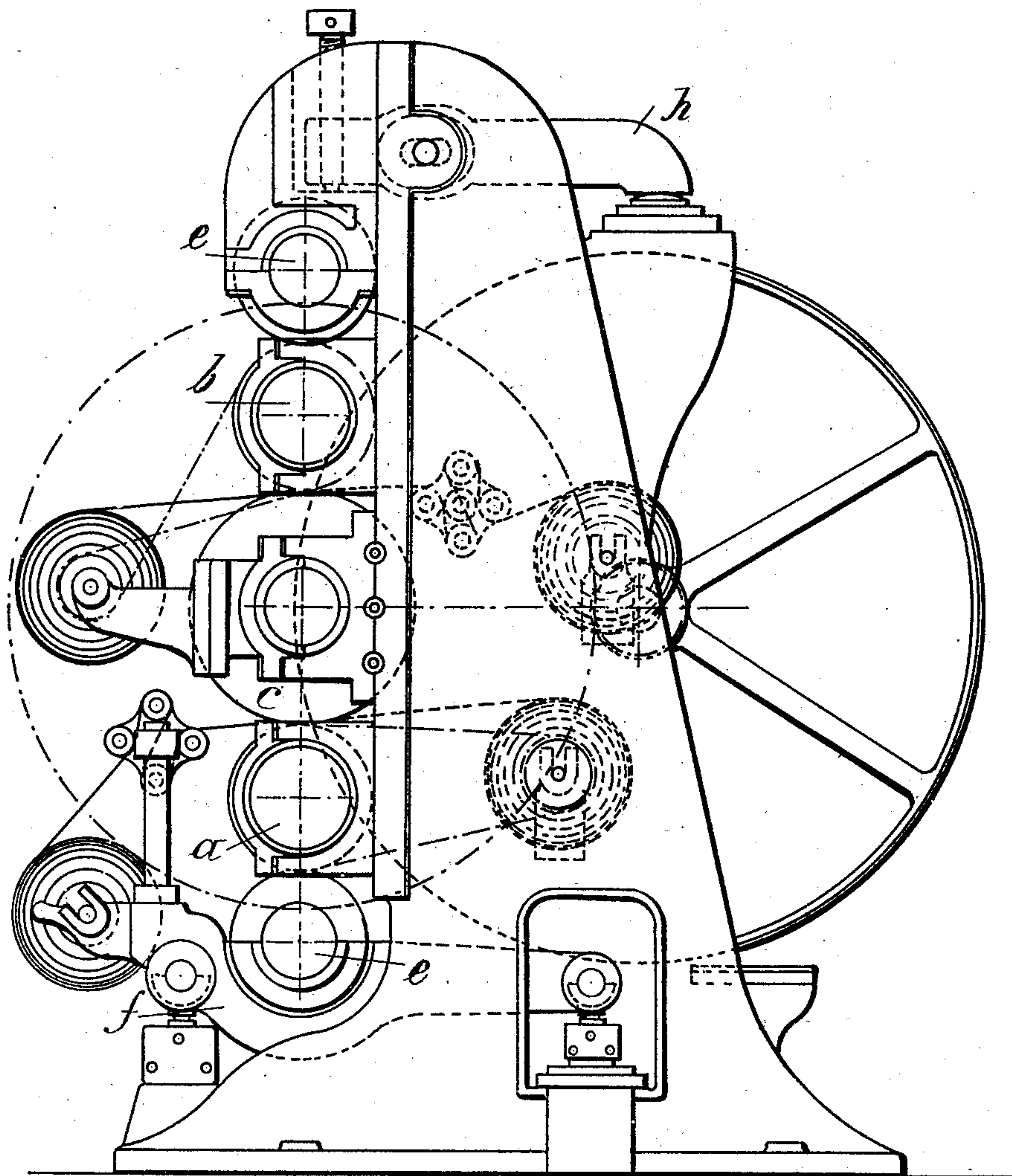
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APPLICATION FILED AUG. 2, 1901.

4 SHEETS—SHEET 3.

Fig. 4.



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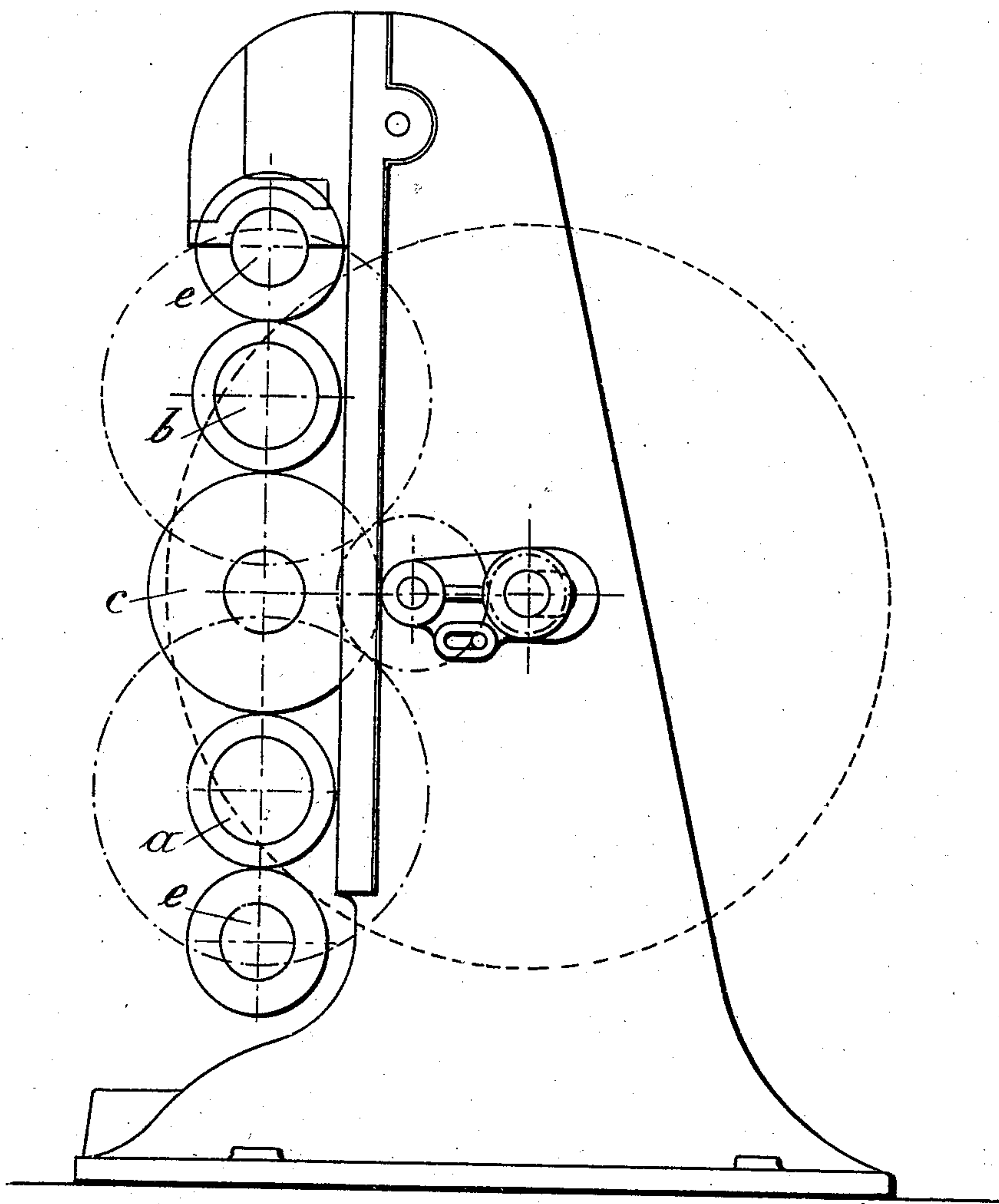
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CALENDER ROLLERS FOR PRODUCING EMBOSSED OR RAISED PATTERNS.

APPLICATION FILED AUG. 2, 1901.

4 SHEETS—SHEET 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHANNES KLEINWEFERS, OF CREFELD, GERMANY, ASSIGNOR TO JOH. KLEINWEFERS SÖHNE, OF CREFELD, GERMANY, A CORPORATION OF GERMANY.

CALENDER-ROLLERS FOR PRODUCING EMBOSSED OR RAISED PATTERNS.

No. 842,890.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed August 2, 1901. Serial No. 70,690.

To all whom it may concern:

Be it known that I, JOHANNES KLEINWEFERS, a manufacturer, and a subject of the King of Prussia, residing in the city of Crefeld, in the Kingdom of Prussia, part of the German Empire, have invented certain new and useful Calender-Rollers for Producing Embossed or Raised Patterns, of which the following is a specification.

This invention has reference to calender-rollers by means of which it is possible to produce embossed or raised patterns in one operation upon a web of fabric or any other suitable material being passed between the said calender-rollers.

The invention also affords means whereby two webs may be treated simultaneously upon one of their respective surfaces only.

The rollers constituting the calendars may either be arranged in two separate series, one of the said series producing the pattern upon the upper, respectively the right surface, according to the arrangement of the rollers, while the other set of rollers immediately thereon prints the pattern of the other surface, or the rollers may be so arranged that both surfaces are treated simultaneously. I may also introduce two webs between the rollers, only one surface of the webs being then impressed with the pattern.

My invention is illustrated by way of example on the accompanying drawings, Figure 1 showing diagrammatically a calender constructed in accordance with my invention in cross-sectional view. Fig. 2 shows a cross-section of a calender, the arrangement of the rollers being somewhat changed. Fig. 3 is a front view of the arrangement of rollers shown in Fig. 2. Figs. 4 and 5 represent another arrangement of rollers for simultaneous work on both sides of the web, two different ways of imparting movement to the rollers being shown in the figures.

The calendars are arranged in suitable standards having journals for the reception of the rollers, which may consist of chilled iron with a covering of compressed paper or may be made of other suitable material. In the construction shown in the drawings I employ, preferably, a compressed-paper roller *c*, the bearing of which is rigidly connected or screwed to the standards. An engraved

steel roller *a* is journaled underneath the said roller *c*, against which the steel roller *a* is pressed by a dummy roller *e*, which is actuated by a suitable system of levers *f*. A second compressed-paper roller *d* is adjustably journaled in the standards. The adjusting-screw *x* of the journal A of the roller *d* presses against the stationary journal B of the roller *c*, which has the effect of producing a space between the said rollers *c* and *d*. On top of the compressed-paper roller *d* I arrange another engraved steel roller *b*, which is forced against the roller *d* by a dummy roller *g* and levers *h*. The web of fabric to be treated upon this stack of two sets of rollers is unwound from the roller *i* and is passed between the steel roller *a* and the compressed-paper roller *c*, the web being kept under pressure by the rollers. After having passed around the lower part of the roller *c* the web to be treated passes freely through the space between the rollers *c* and *d* and then up around the compressed-paper roller *d* and between it and the engraved roller *b*. While passing between rollers *d* and *b*, the web is again subjected to pressure and receives the imprint or stamp on the reverse side. The finished fabric is then rolled up upon the roller *k*. It is obvious that in this arrangement of rollers I am enabled to regulate the pressure of both sets of rollers at will and independently of each other so as to produce any desired variety of effects upon both sides of the fabric. It is also obvious that these calendars may also be employed for treating webs of fabrics or similar articles upon one side only, two different webs being treated simultaneously upon one side only. In this case the web which is to be treated by the lower set of rollers is unwound from the roller *i* and is wound up upon the roller *l*, while a separate roller *m* is provided to unroll the upper web, which is to be treated and imprinted or embossed by the upper roller *b*, the web being wound up upon the roller *k*.

If the journal of the lower compressed-paper roller *c* is unscrewed from the frame, the pressure upon the paper rollers *c* and *d* is also released upon one side of the rollers, so that the rollers can yield, inasmuch as the pressure from the steel rollers can only act upon the journals of the compressed-paper

rollers. In this manner I effect a considerable saving of power; but the two webs, which are to be treated separately, will then both be calendered with the same pressure.

5 Separate dummy rollers, which are actuated by suitable levers, serve to press the engraved steel rollers against the paper rollers, which are journaled in the standards for the calenders. I may also dispense entirely with
10 the dummy rollers for producing the pressure, so as to diminish the number of rollers from six to four, as shown in Fig. 2 of the drawings, each set of rollers being then composed of two rollers only—one engraved steel
15 roller and a compressed-paper roller or equivalent means. In this form of construction of the calenders the two engraved steel rollers *b* and *a* are arranged in the middle of the calender on top of each other, a paper roller *c*
20 and *d*, respectively, being arranged on top of the steel roller *b* and below the steel roller *a*, the pressure-producing devices *f* and *h* acting directly upon the said paper rollers.

As it is important that the surfaces of the
25 steel rollers do not touch each other, provision is made to keep them at a distance, which is effected by providing a projecting collar on each side of the rollers. These collars touch each other, while the surfaces of
30 the rollers themselves are out of contact with each other. The pressure is acting upon the paper rollers, forming the top and the bottom of the stack.

My invention also provides the use of but
35 one compressed-paper roller as a counter-roller in combination with two engraved steel rollers *a* and *b*, as shown in Figs. 4 and 5 of the drawings. This construction is especially intended to provide means for the cal-
40 endering, embossing, raising, printing, and the like of two separate webs of fabric.

The steel rollers *a* and *b*, between which the compressed-paper roller *c* is situated, may be heated independently of each other.
45 I may use any kind of device *f* and *h* for producing the pressure upon the rollers. Inasmuch, however, as it is necessary to vary the pressure of the upper and lower engraved roller upon the intermediate paper roller, the
50 latter is held stationary in the stack of calenders. If the same kind of goods is used for both webs, one device can be used for the production of pressure for both parts of the calenders. It will thus be seen that at least
55 one of the rollers is held stationary in the stack and the other rollers are adjustable with relation to the stationary roller by means located upon each side of the stack, so that independent adjustment can be made
60 with relation to the pressure of each engraved roller upon the material subjected to treatment.

The calenders may be operated from the intermediate counter-roller *c*, as shown in
65 Fig. 4 of the drawings. However, I may also

arrange to actuate the steel rollers. On top of the upper steel roller and underneath the bottom roller I may also place an antifriction-roller *e*, these rollers, which, however, are not indispensable, having the effect of preventing the pivots of the heated steel rollers to directly transfer the pressure upon their journals. This kind of arrangement of rollers affords the possibility to treat two webs of different kinds of material at the same
75 time and under a pressure corresponding to the nature of the material to be treated and it also enables the operator to watch the steel rollers during the process of calendering and to control the heating of each individual
80 roller according to the color and the physical condition of each web, the rollers being arranged so as to be heated independently of each other. Thus it is obvious that in a system of rollers like that forming the subject of
85 the present application I may produce different patterns on both sides of one fabric or I may treat two fabrics at a time on the same calender, each of the fabrics being given a different treatment as regards pressure and
90 temperature, which is of great importance in those manufacturing industries where calenders are made use of.

What I claim, and desire to secure by Letters Patent of the United States, is— 95

1. In a device of the character described, the combination with the standards, of compressed-paper rollers, engraved steel rollers, the rollers being arranged to form a stack, and one of said rollers being held stationary
100 with respect to the standards, and means for varying the pressure of the rollers upon the material subjected to treatment, substantially as described.

2. In a device of the character described, the combination with the standards, of sets of calender-rollers, each set consisting of a paper roller and a steel roller, the rollers being arranged to form a stack, and one of the rollers of one set being mounted in fixed relation to
110 the standards, and means for varying the pressure of the rollers upon the material subjected to treatment, substantially as described.

3. In a device of the character described, the combination of two sets of calender-rollers arranged to form a stack, each set consisting of a paper roller and a steel roller, means for adjusting the distance between the sets of rollers, and means for varying the
120 pressure of the rollers upon the material subjected to treatment, substantially as described.

4. In a device of the character described, the combination with the standards, of two
125 compressed-paper rollers adjustably journaled therein, engraved steel rollers respectively above and below said paper rollers, an upper and a lower dummy roller, the rollers being arranged to form a stack, and levers 130

acting upon said dummy rollers to press the latter against said steel rollers, substantially as described.

5 In a device of the character described, the combination with the standards, of two sets of rollers arranged to form a stack, each set consisting of an engraved steel roller and a compressed-paper roller adapted to coöperate therewith, and independently adjust-
10 able means acting upon one of the rollers of each set, the two sets of rollers being adapted

for the treatment of both sides of a single web, or of one side each of two separate webs, substantially as and for the purpose described.

In witness whereof I have hereunto signed 15
my name in the presence of two subscribing witnesses.

JOH. KLEINWEFERS.

Witnesses:

FR. PANNES,
RICHARD PANNES.