

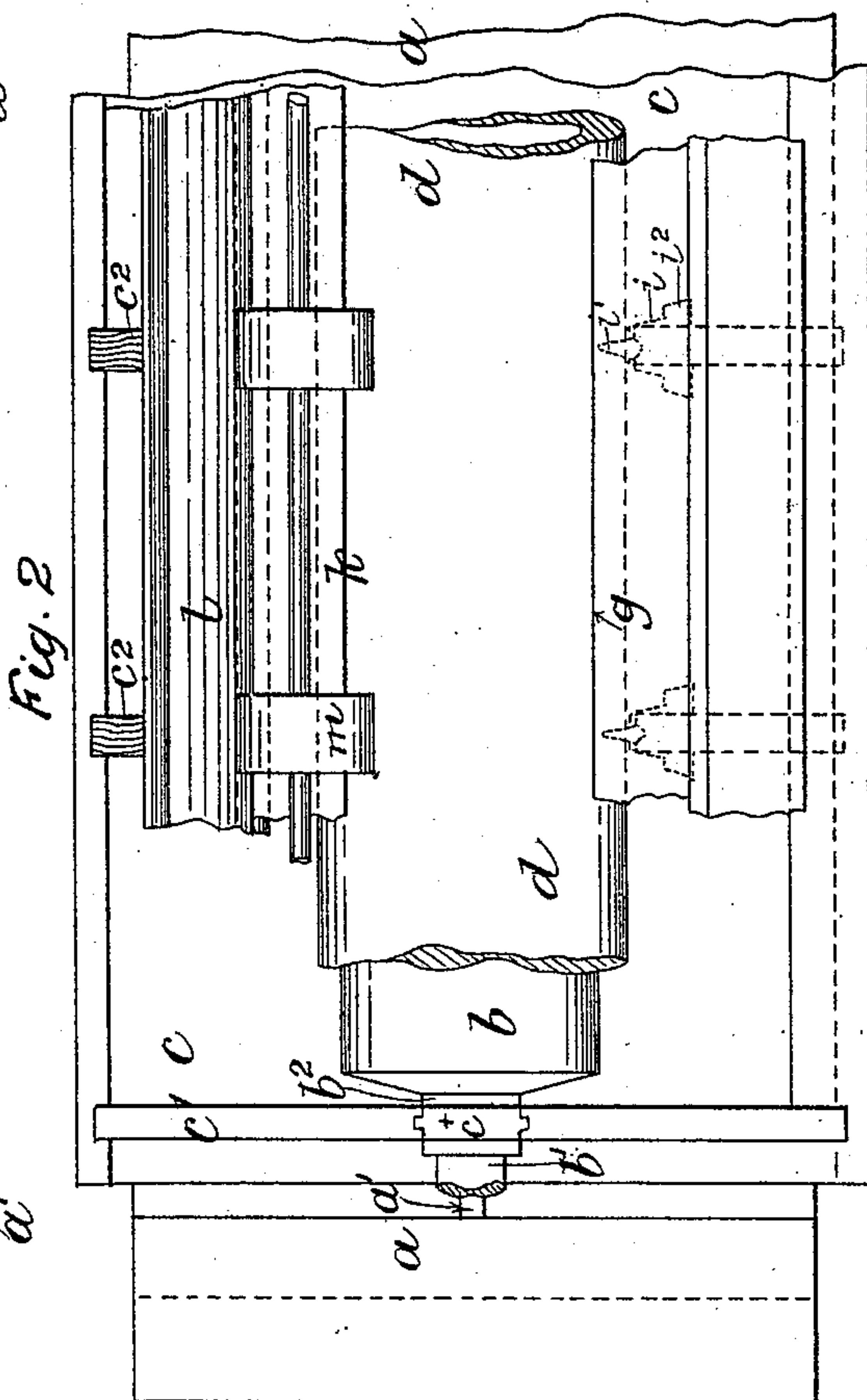
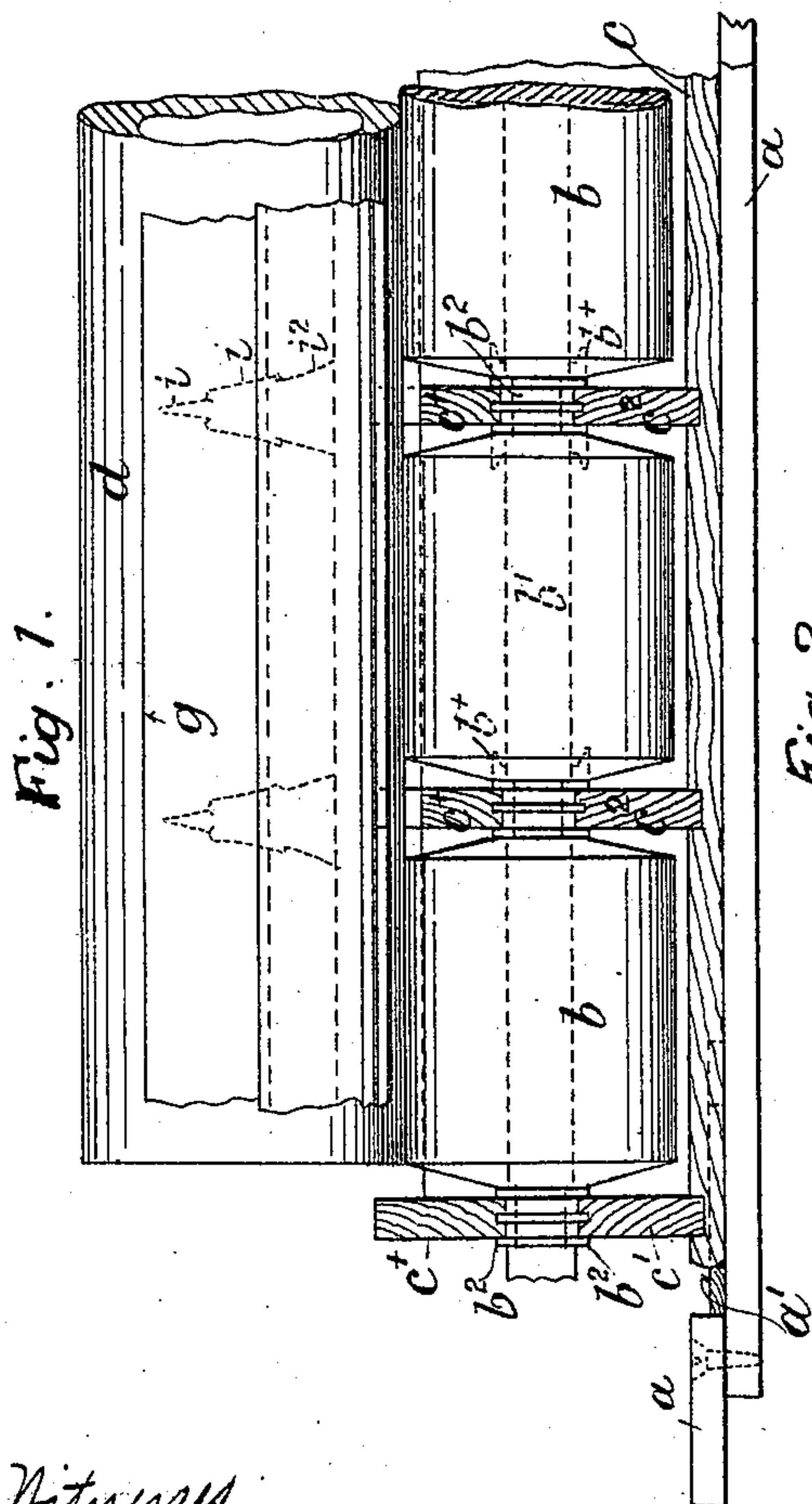
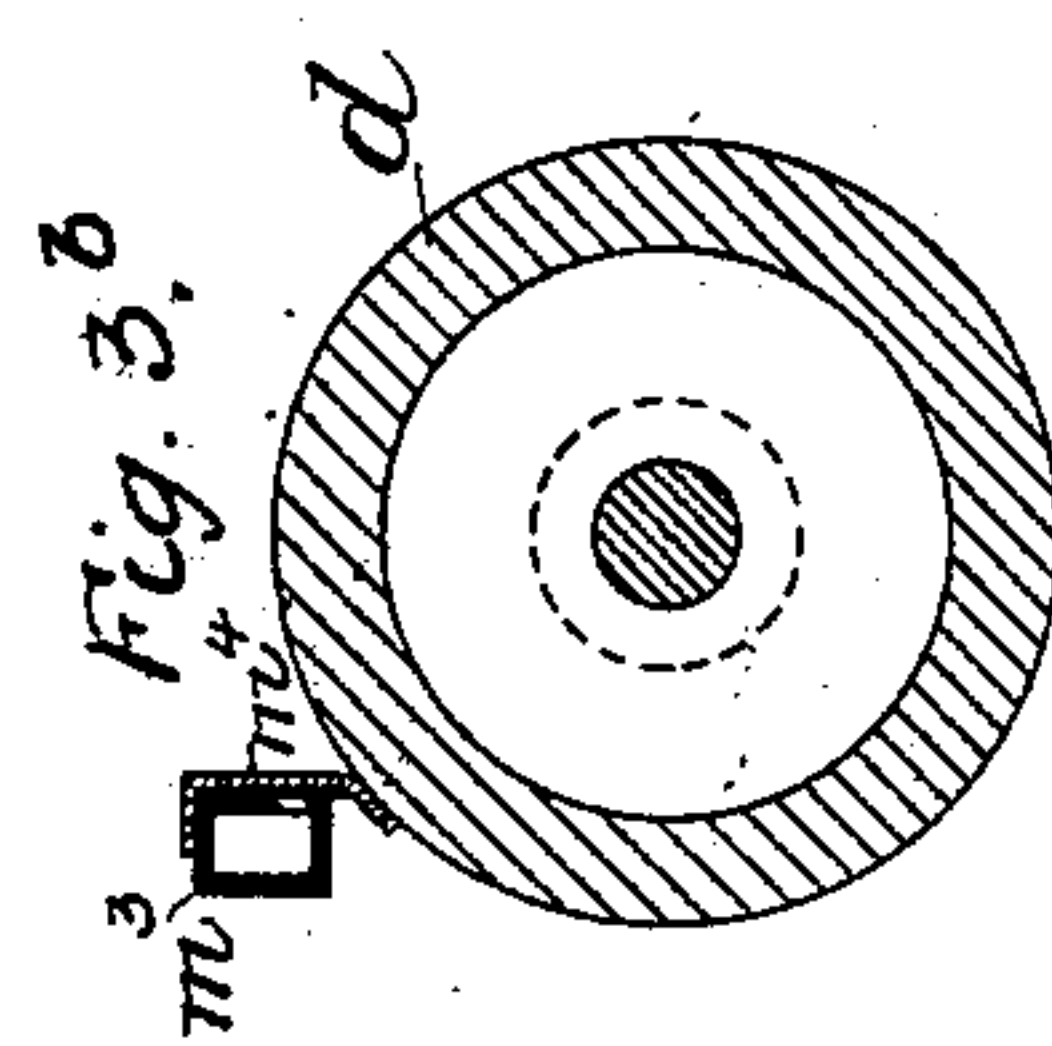
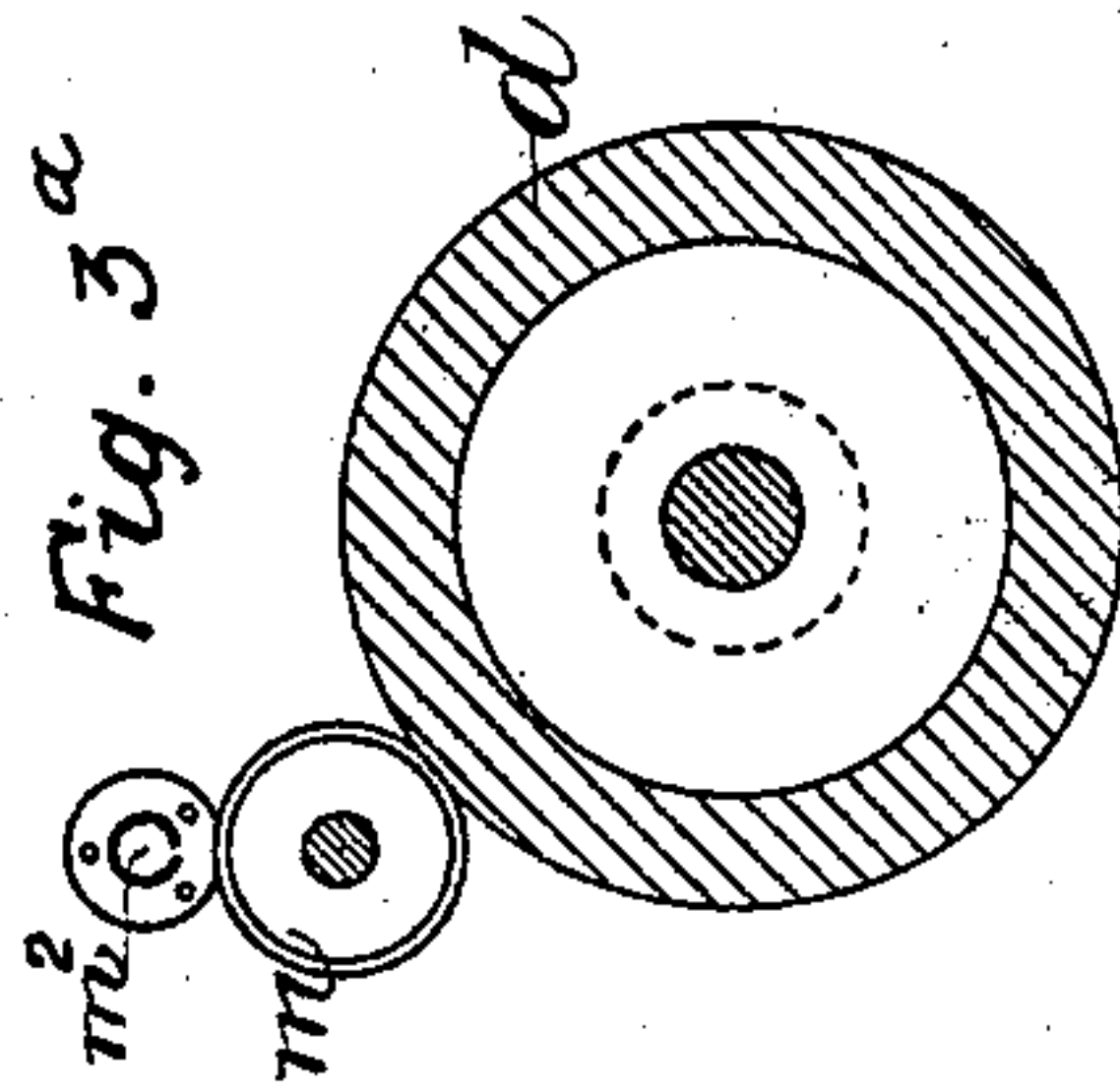
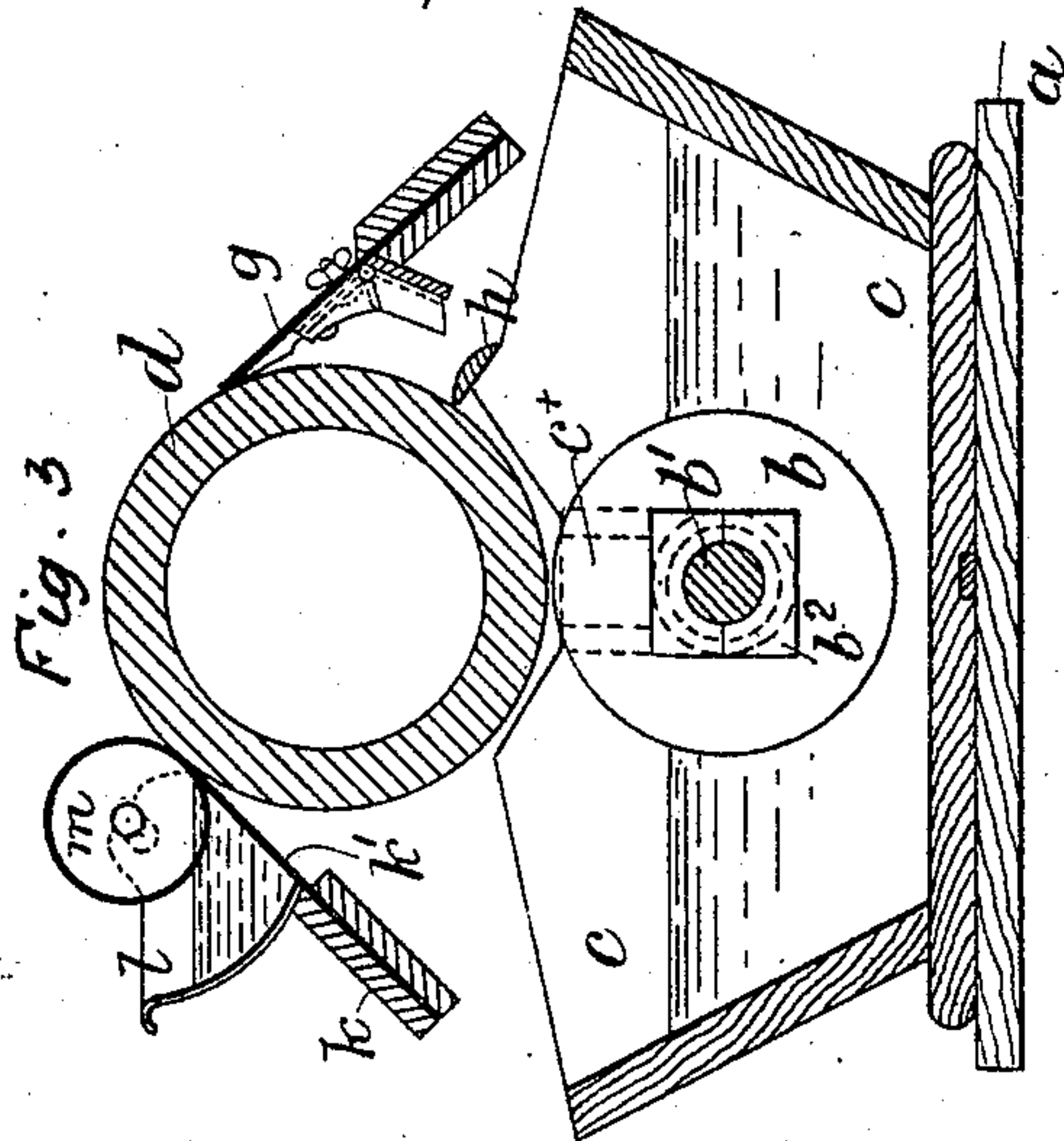
(No Model.)

4 Sheets—Sheet 1.

F. D. HADDON & A. A. KUENEMANN.
MACHINE FOR PRINTING ON FABRICS.

No. 581,201.

Patented Apr. 20, 1897.



Witnesses
Louis Wenke
S. C. Connor

Inventors
Frank D. Haddon } By their attorney
and Albert A. Kuenemann } Howard A. Hays

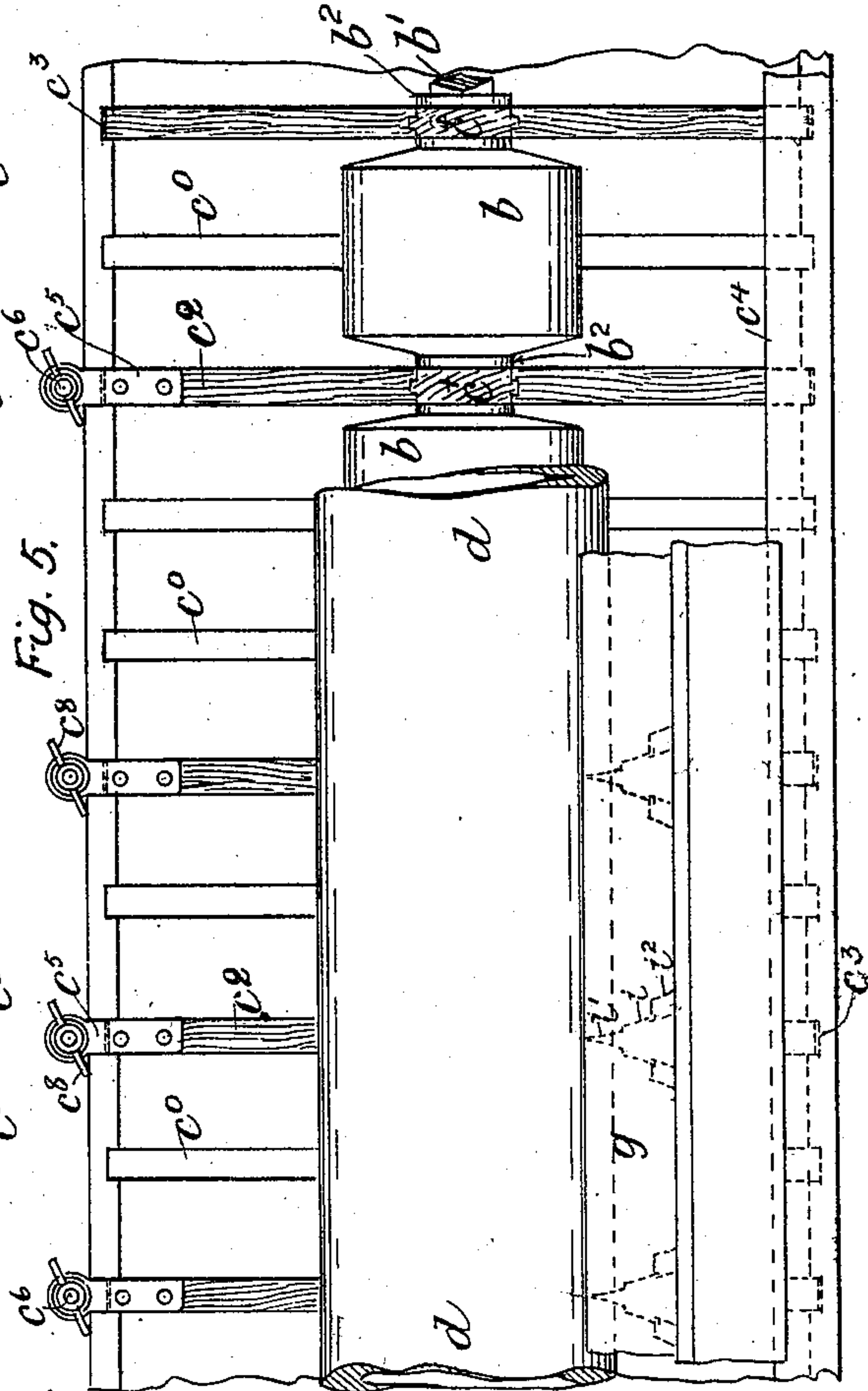
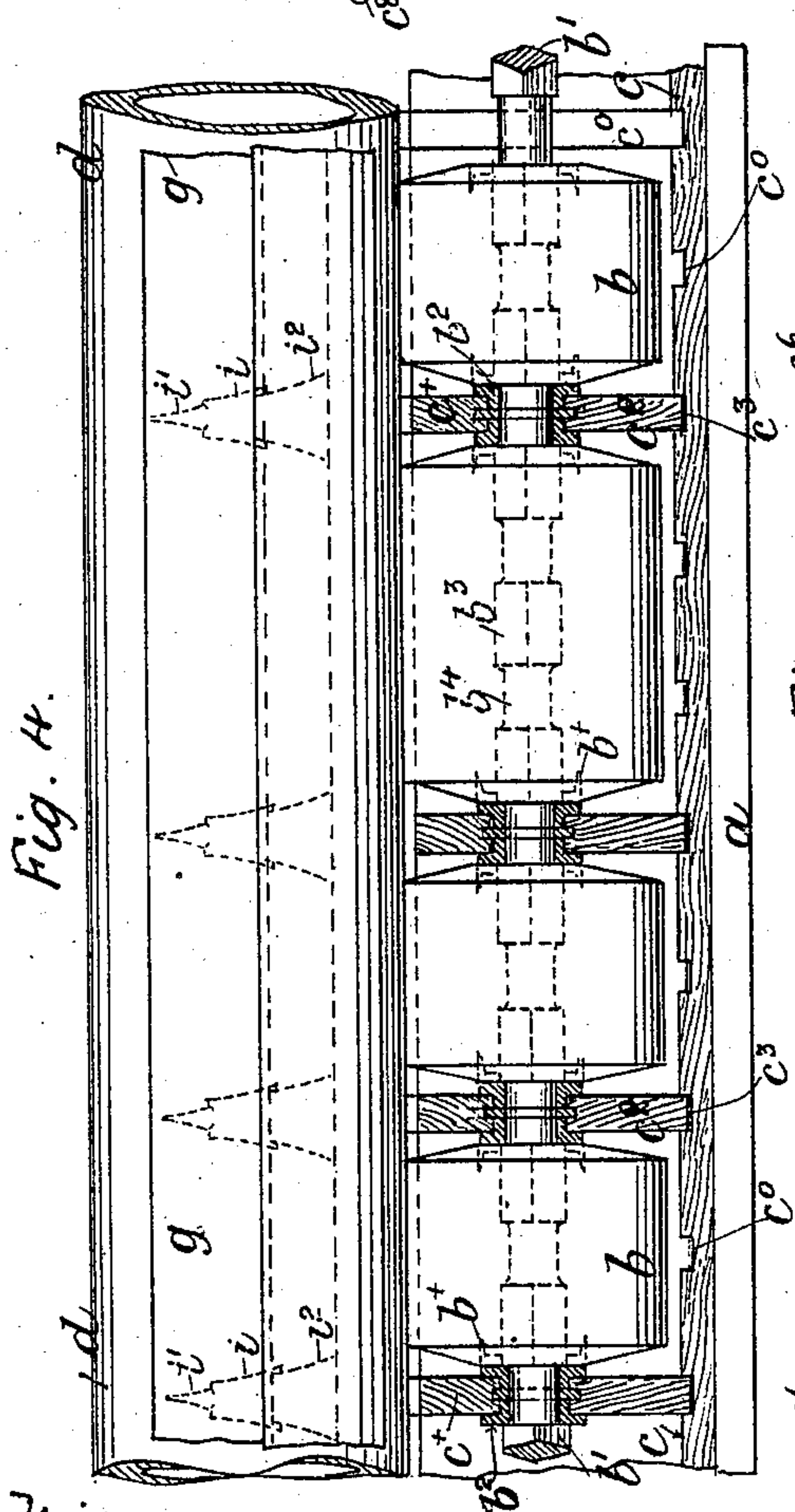
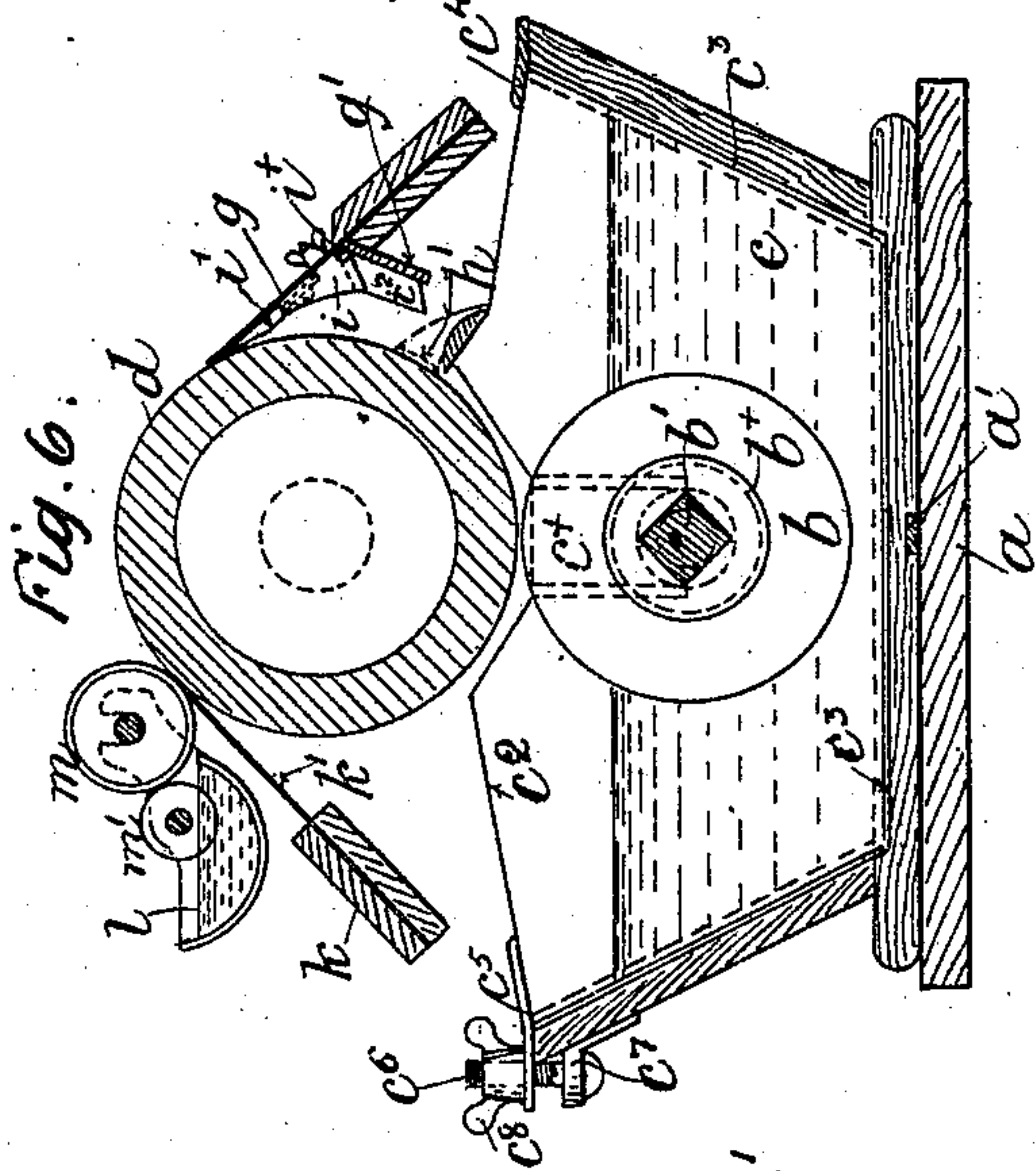
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4 Sheets—Sheet 2.

F. D. HADDON & A. A. KUENEMANN.
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Patented Apr. 20, 1897.



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(No Model.)

4 Sheets—Sheet 3.

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Fig. 6.^a

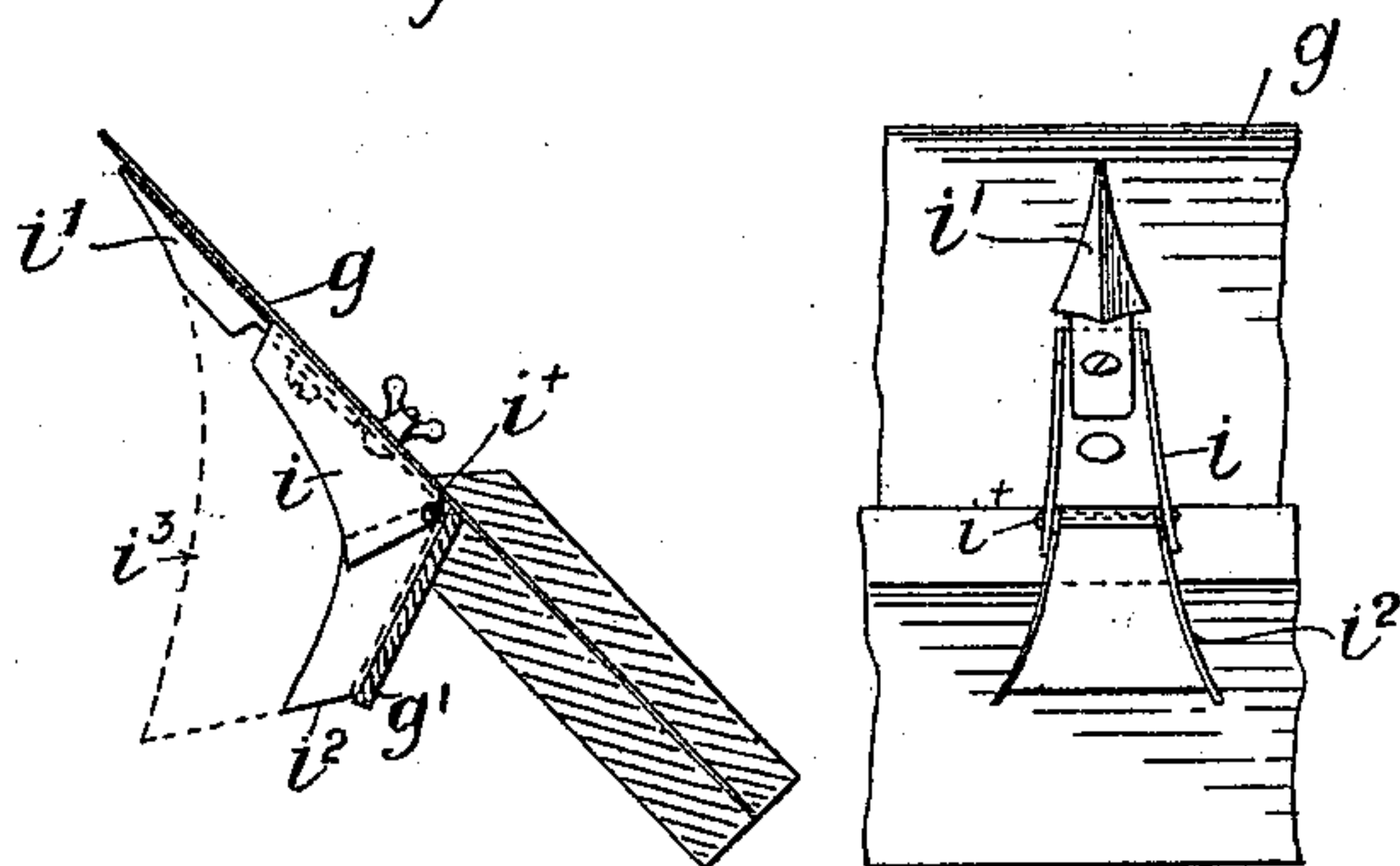
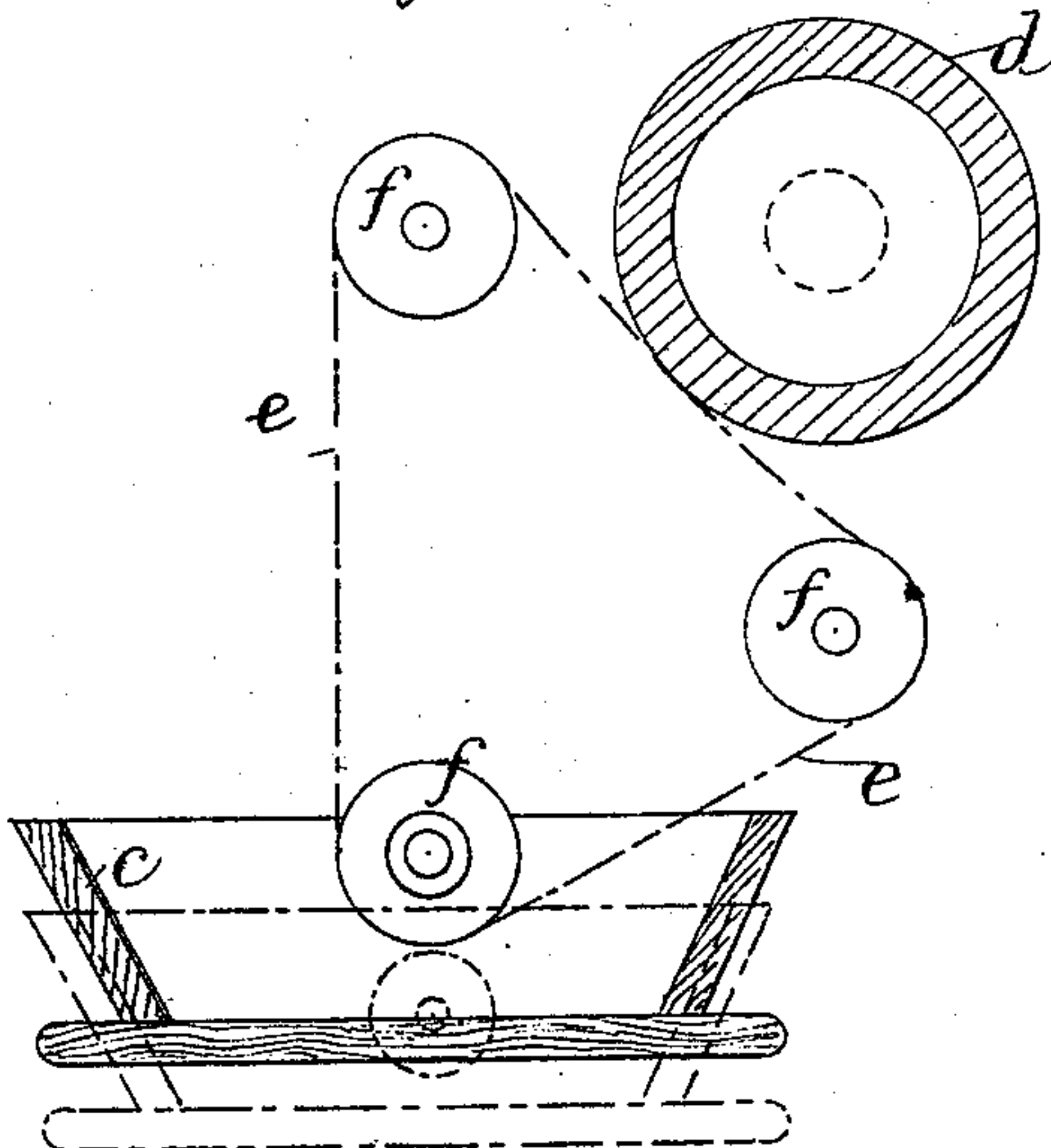


Fig. 7.



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(No Model.)

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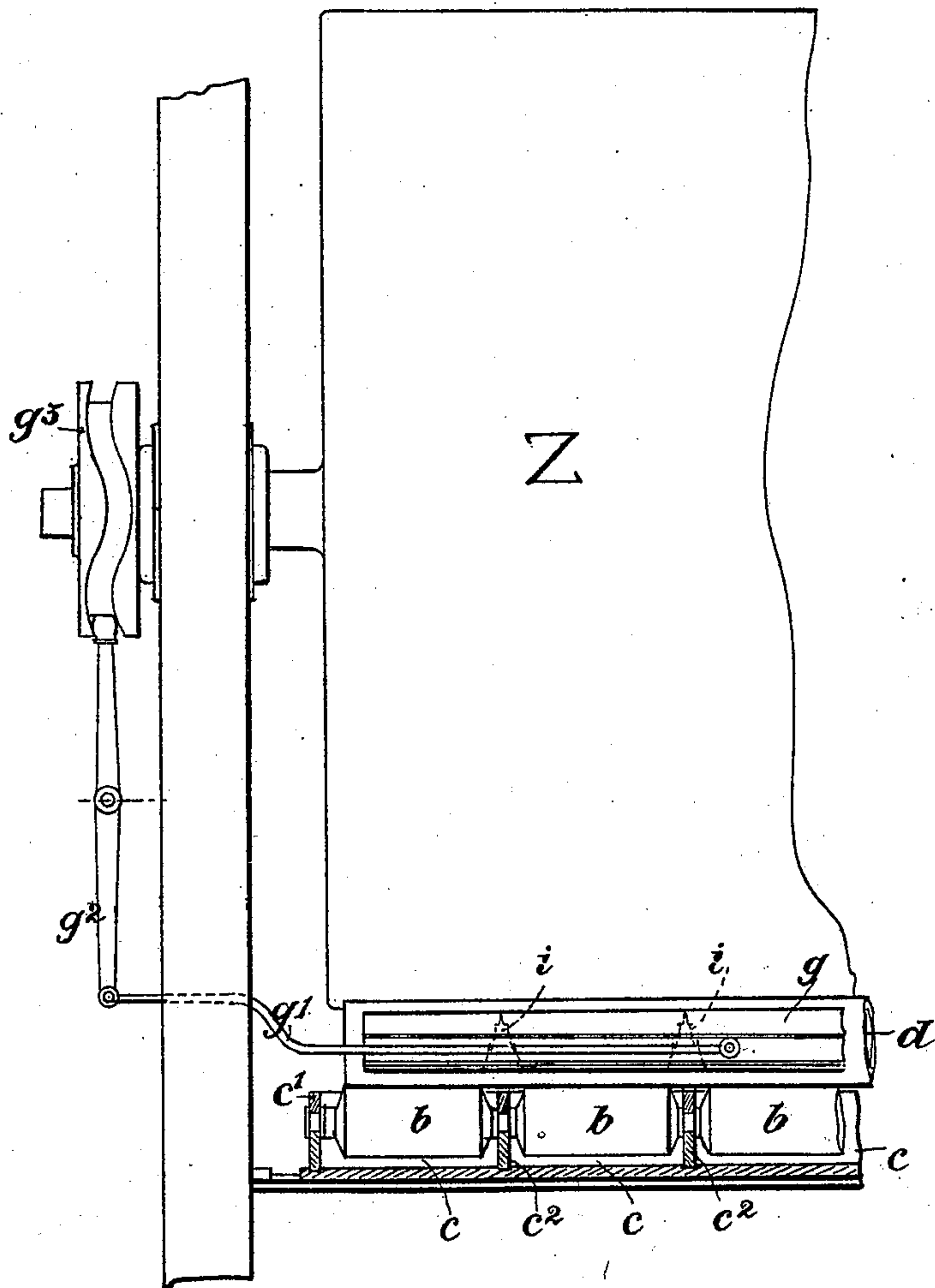
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MACHINE FOR PRINTING ON FABRICS.

No. 581,201.

Patented Apr. 20, 1897.

FIG. 8.



WITNESSES

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UNITED STATES PATENT OFFICE.

FRANK D. HADDON, OF ROMILEY, AND ALBERT ARTHUR KUENEMANN, OF MANCHESTER, ENGLAND.

MACHINE FOR PRINTING ON FABRICS.

SPECIFICATION forming part of Letters Patent No. 581,201, dated April 20, 1897.

Application filed March 10, 1896. Serial No. 582,595. (No model.)

To all whom it may concern

Be it known that we, FRANK DANIEL HADDON, of Romiley, in the county of Chester, and ALBERT ARTHUR KUENEMANN, of Manchester, in the county of Lancaster, England, subjects of the Queen of Great Britain, have invented new and useful Improvements in or Applicable to Machinery for Printing Upon Fabrics, of which the following is a specification.

The principal object of this invention is to enable two or more colors to be applied or printed simultaneously by one and the same engraved roller in machines for printing upon calico or other fabrics, and to further enable those colors to be varied, changed, or omitted when required; and our improvements may be applied to one or more than one of the "nips" of the ordinary printing-machine.

The invention relates to such apparatus wherein a single engraved roller is combined with a series of mechanical furnishers of any known construction, taking their color from a series of troughs wherein different colors may be placed.

Figure 1 is a front view; Fig. 2, a plan, and Fig. 3 a transverse section, of an engraved printing-roller provided with sectional furnishers and color-troughs and with our improvements applied thereto. Figs. 4, 5, and 6 are respectively similar views illustrative of a modification thereof; and Figs. 3^a, 3^b, 6^a, and 7 are detached sectional views showing slight modifications hereinafter more particularly referred to. Fig. 8 is a view of a detail hereinafter explained.

We provide an adjustable plate shelf or stand *a*, as usual, which can be raised, lowered, and set as required by any known means (not shown on the drawings) beneath and parallel to the color-roller or furnishing-roller *b*.

The color or furnishing roller *b*, which may be of any well-known description, such as a rotary brush, is made in sections, as seen at Figs. 1, 2, 4, and 5, mounted upon a long rod or axle *b'*, and the color-trough *c*, in which it works and which is supported by the above plate shelf or stand *a*, is not made as usual, but consists of a series of compartments, each supplied with a separate color, in which one of the sections of the color-roller or furnish-

ing-roller *b* works, the ends of each compartment being so formed that the axle *b'* of the color or furnishing roller *b* can pass through the same and yet not allow the colors to pass from one compartment to another.

The color-trough *c* may be made in one length with suitable ends *c'* and division-plates *c²*, forming the compartments, such ends *c'* and division-plates *c²* being slotted to receive suitably-grooved brasses *b²* for carrying the axle *b'* of the color or furnishing roller *b*, the sides of the slots fitting in the grooves of the brasses *b²* and the open part of the slot being filled in with a cap or filling-piece of suitable material, grooved or provided with a tongue (or both) at either edge to fit the sides of the slot in the end *c'* or division-plate *c²* of the color-trough *c*.

The axle *b'* of the color-furnishing roller *b* is preferably reduced in diameter where it passes through the ends *c'* or divisions *c²*, and the ends of each section of the said roller *b* are provided with a suitable brass or other central plate or disk (shown dotted at *b^x*, Fig. 1) preferably let into the said roller *b* and bearing against the brasses *b²* in the divisions *c²* and ends *c'* of the trough *c*; or other means may be adopted to insure that the color or furnishing roller *b* may revolve in the colors without leakage at the recessed or cut-away ends *c'* or partitions *c²* of the trough *c*.

The trough *c*, with its series of compartments thus formed, is adjustable endwise (for example, upon strips *a'* on the shelf *a*) to bring each compartment exactly opposite that part of the engraved roller *d* to which it is to supply color by means of the furnishing-roller *b*.

Other known forms of short color-compartments may be used, or the trough *c* may be made with a series of removable and adjustable divisions *c²*, as seen at Figs. 4, 5, and 6, so that the length of each compartment may be varied, and in this case we make the trough *c* with a series of transverse internal grooves of suitable depth, say one inch or more apart, and of a width corresponding with the thickness of the removable divisions *c²*, the edges of which are or may be provided with an india-rubber or other suitable packing fitting into the grooves *c⁰*. One side of the

trough c is provided with a projecting ledge c^4 , beneath which one extremity of the divisions c^2 fits, and the other extremity of each division is provided with a plate c^5 and bolt c^6 , passing through a slot or hole in the trough side, (or in a bracket c^7 , fast to the trough side,) and fixed by a winged nut c^8 ; or other equivalent devices may be employed for fixing the division c^2 in the trough and removing it readily. We form the axle b' of the furnishing-roller with alternate squared spaces b^3 and necks b^4 , the latter corresponding in number and position with the grooves c^0 in the trough in order that sectional furnishing-rollers b of varying lengths may be fitted thereon, and two lengths, if desired, may revolve in one compartment of the trough, as will be readily understood without illustration.

The form of each separate furnisher may be varied. For example, each furnisher may consist of a band or sieve e , (see Fig. 7,) passing around a roller f , revolving in its color-trough or furnished by such rollers, as shown dotted on Fig. 7.

It is found that the rotation of the furnishing-roller b and the engraved roller d causes a large volume of color (especially if the color is at all thick) to rise above the level of the sides of the color-trough c , and being arrested by the ordinary color-doctor g to accumulate in a wave, which as it falls back mingles with the color supplied to the said engraved roller d from an adjacent compartment or trough, and thus spoils the colors and the printed fabric. We arrest this wave of color by a rod, bar, blade, or strip h of suitable material (or other equivalent device) between the furnishing-roller and the color-doctor g (or by a series of such rods, bars, blades, or strips, one to each color-compartment) so formed and set nearer to the engraved roller d than the furnisher is set as to return the majority of each color to its respective trough and to allow only a thin layer or film of color to pass on the surface of the said engraved roller d to the color-doctor g . In some cases it may be necessary to have this bar h touching the roller d in places or to affix small plates h' onto this bar h , (see dotted lines, Fig. 6,) so as just to touch the printing-roller d over the divisions, and thus stop all color from passing up the roller at those parts.

In order to prevent the mingling of one color with an adjacent color at the edges of the stripes and to insure the return of all superfluous color to its proper compartment, we arrange above each division a suitable guide i , which we fix to the color-doctor or other part moving therewith. This guide is made or provided with a piece i' in the form of a pointed or other suitable cleaner bearing upon the surface of the engraved roller b and immediately beneath the color-doctor g , and this guide i is provided with depending edges i^2 (see Fig. 6^a) and widened out at its

lower end to allow of the motion of its edges i^2 at and above either side of the division or end of the compartment above which it is applied. Thus the color running off the lower end of these edges will always fall into the proper compartment or trough.

The point i' is preferably adjustable to the upper end of the guide i , and the latter is preferably hinged or pivoted at the center at i^x to allow for variation in the form of the color-doctor g , especially where the latter is provided with a "cape" g' for directing the flow of color back into the trough c . In some cases we may fix in this guide i a plate or piece of india-rubber, xylonite, or other suitable material i^3 , as shown dotted on Fig. 6^a, in such a way that it may bear slightly on the engraved roller d , commencing at the point of contact of the roller d and color-doctor blade g and extending downward, as shown.

Fig. 8 is a diagram representing the ordinary manner of moving the color-doctor g . The axis of the cylinder Z , to which the engraved roller d is applied, is provided with the usual cam g^3 , actuating the lever g^2 . This lever g^2 is connected in the ordinary manner, say by a link g' , to the color-doctor g .

It is further found necessary in applying colors by the above or similar means to one engraved roller to cool or lubricate (and so to clean) the surface of the engraved roller. For this purpose we fix on the "lint-doctor shears" k a long trough l , or the shears k and lint-doctor k' may be used as the under side of the trough l , or the trough l may be used independently of the "doctor" k' . In this trough l is mounted (so as to be capable of revolving) a roller m of iron or other metal or material coated with a soft pliable material or composition, and so fixed at each end of the trough l as to be partly within the said trough l and parallel with the surface thereof and partly projecting and in contact with the said engraved roller d just above the line of meeting of the lint-doctor k' with the engraved printing-roller d . The covered roller may be parallel throughout its length, so as to touch the printing-roller from end to end, or it may be cut away at parts, (especially when used with the divided color-trough c , above described,) so as only to be in contact with the engraved roller d at those parts where the color-furnishing rollers b do not touch, or at such other parts as may be required, so as to clean and cool the whole printing-roller d or only certain portions thereof.

The trough l is to contain water or other suitable liquid, and will be kept full to such a level that the lower portion of the covered roller m will dip therein and constantly feed such moisture to the surface of the printing-roller d in contact with which it revolves; or, if preferred, the covered roller m may revolve above the level of the water or liquid in the trough l (see Fig. 6) and be supplied therewith by means of a small furnishing-

roller m' , revolving in the water or liquid and in contact with the soft-coated roller m , or in any other convenient manner. For example, the roller may be supplied at the desired points with liquid by means of a pipe m^2 (see Fig. 3^a) or a trough having suitable perforations therein.

In place of the soft-coated roller above described we may in some cases use a fixed bar m^3 , (see Fig. 3^b), provided with a strip or a series of strips of some soft or spongy material m^4 , one edge of which slightly presses on the surface of the engraved printing-roller d , and water or liquid may be supplied to each strip from the interior of the bar m^3 or by a revolving roller or otherwise, so as to dampen and cool the printing-roller d as it revolves in contact with the strip. This cooling and dampening device is applicable to other apparatus of similar nature to that hereinbefore described and claimed, and therefore forms the subject of a separate application filed by us September 1, 1896, Serial No. 604,543.

We claim as our invention—

1. The combination with an engraved printing-roller of a series of narrow mechanical furnishers taking color from separate compartments and supplying such color directly to the printing-roller, a doctor and means for moving the doctor positively, and guides moving with the doctor and cooperating with the printing-roller for keeping the colors pure in

the color-trough and separate upon said printing-roller, substantially as hereinbefore set forth.

2. The combination with an engraved printing-roller of a series of narrow furnishers supplied from separate compartments containing color and supplying such color directly to the printing-roller, guides moving with the doctor and a strip between each furnisher and the color-doctor so as to prevent the colors from rising in too great volume upon the engraved roller and mingling thereupon, substantially as and for the purposes described.

3. The combination with an engraved printing-roller, a series of color-compartments, and of corresponding color-furnishers, guides moving with the doctor for keeping the colors separate on the engraved roller and returning each to its proper color-trough, and means for insuring a supply of water or other suitable liquid to the engraved roller at parts corresponding to the ends or divisions of the color-compartments, substantially as hereinbefore set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FRANK D. HADDON.

ALBERT ARTHUR KUENEMANN.

Witnesses:

GEORGE DAVIES,
JNO. HUGHES.