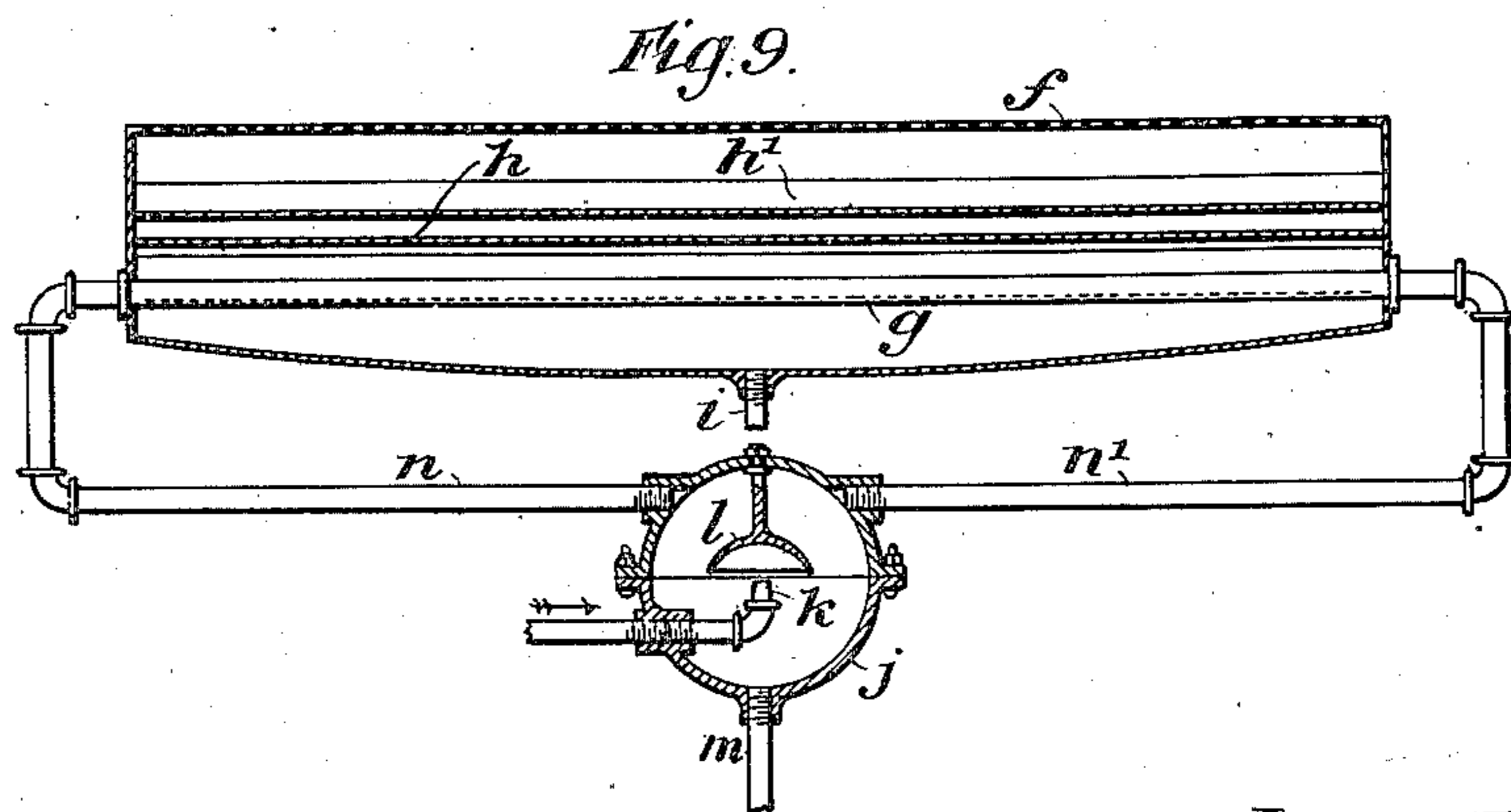
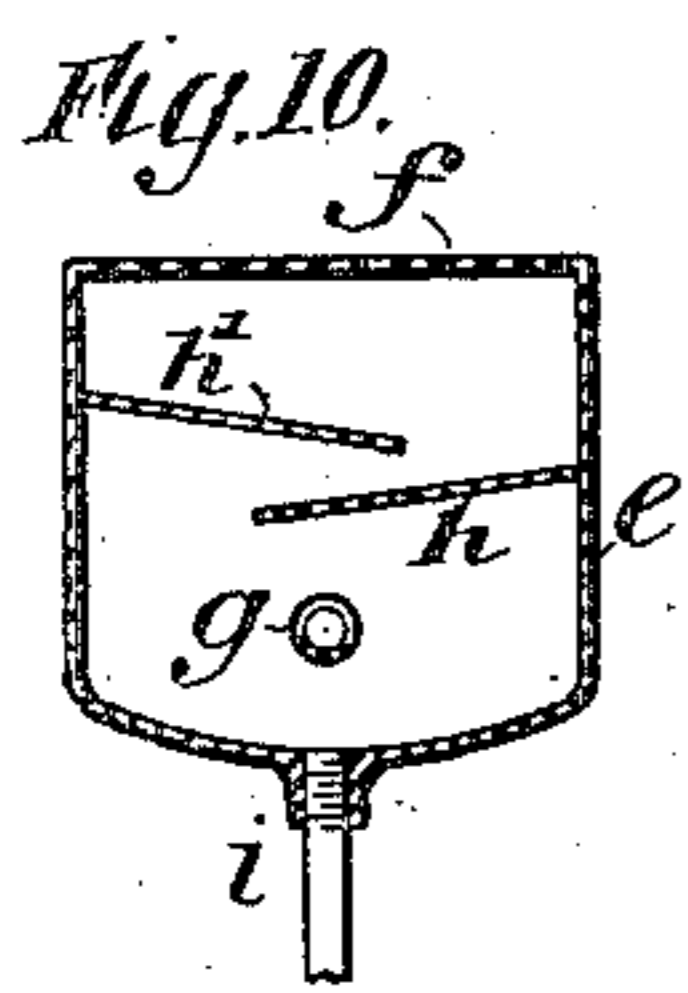
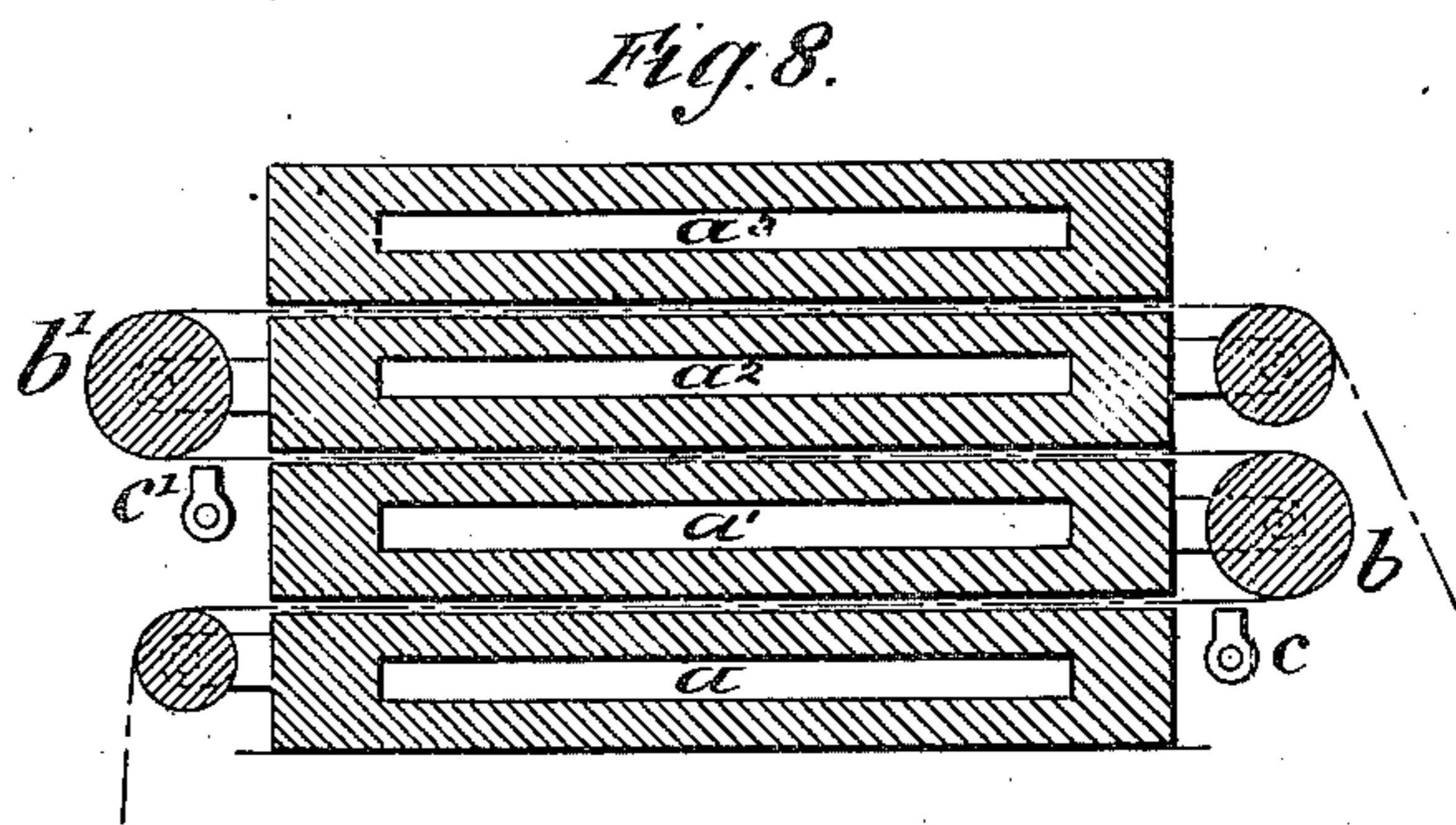
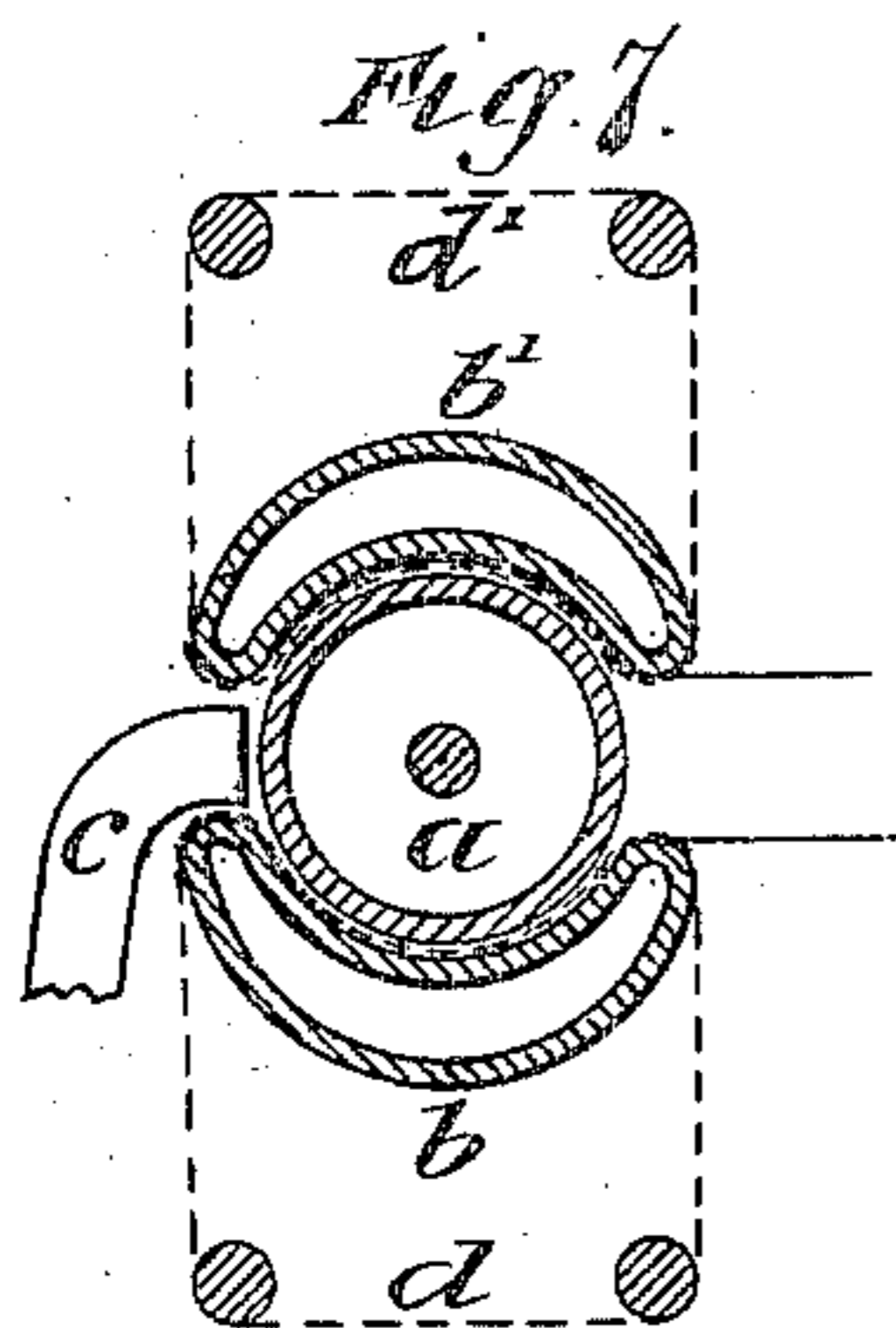
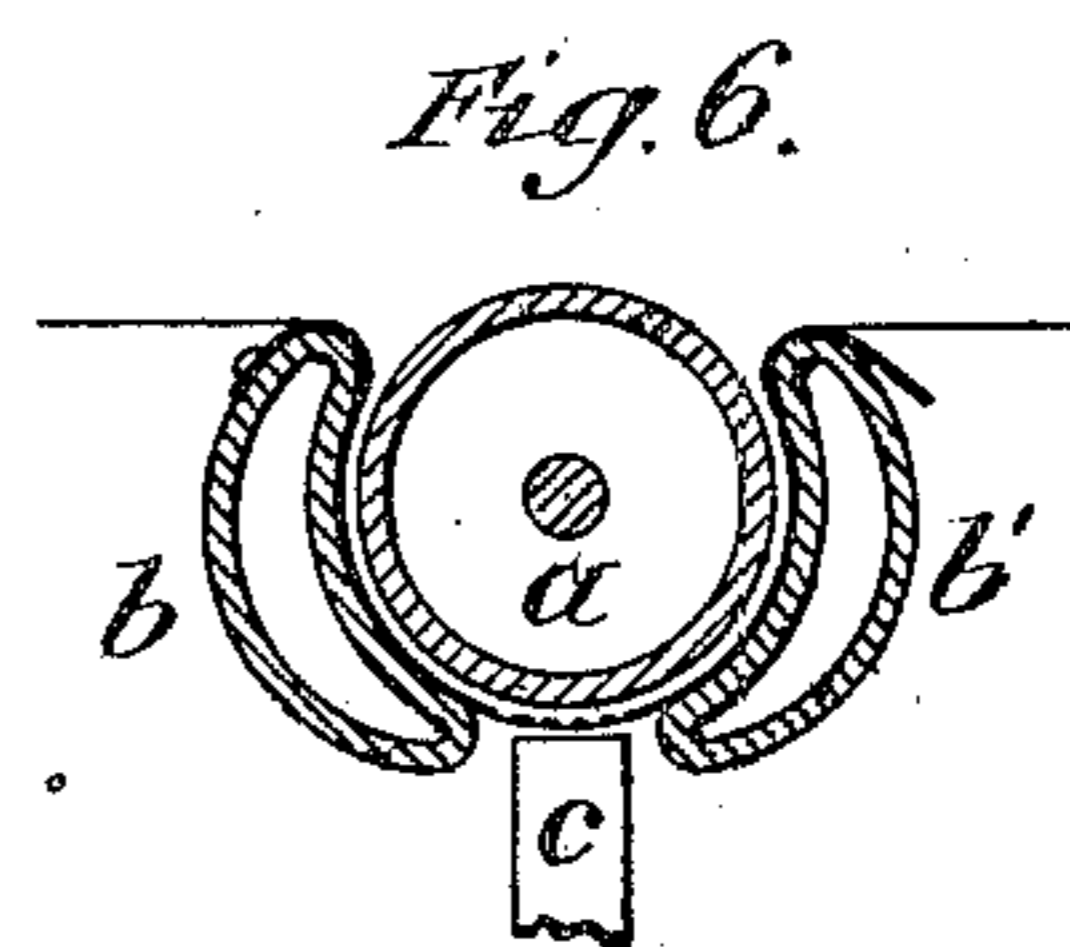
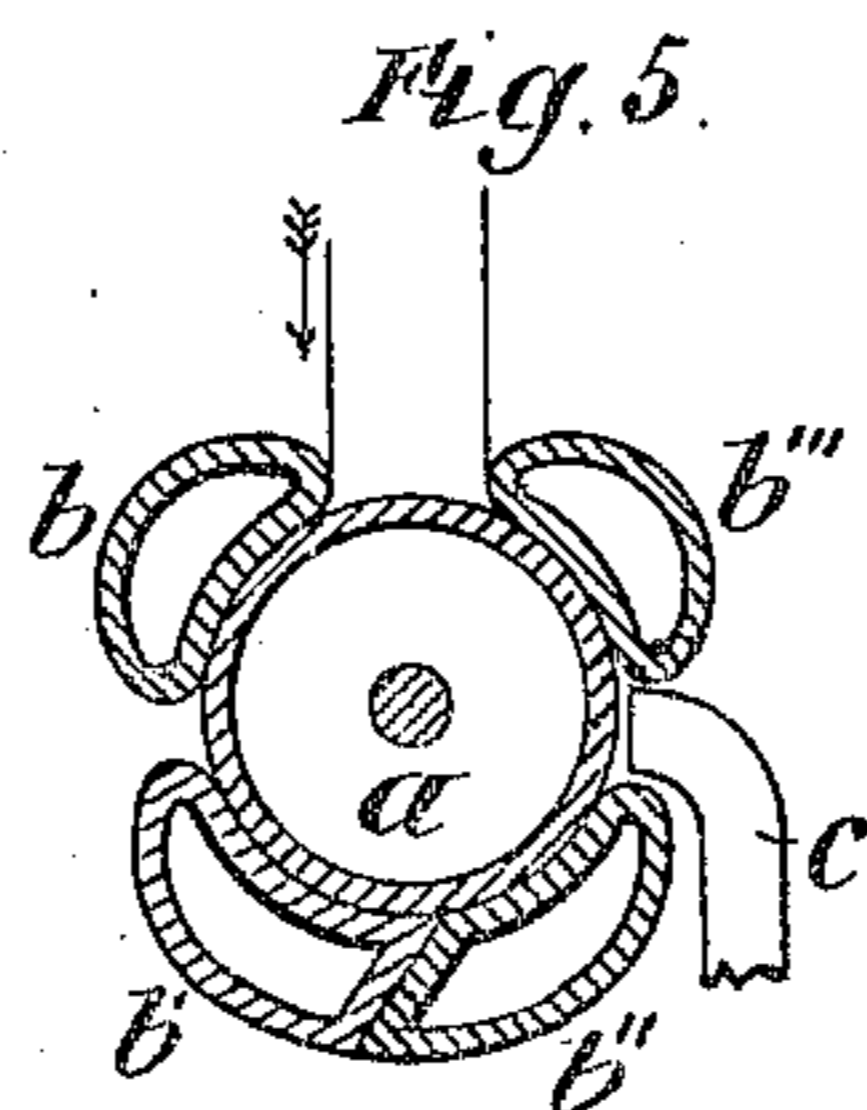
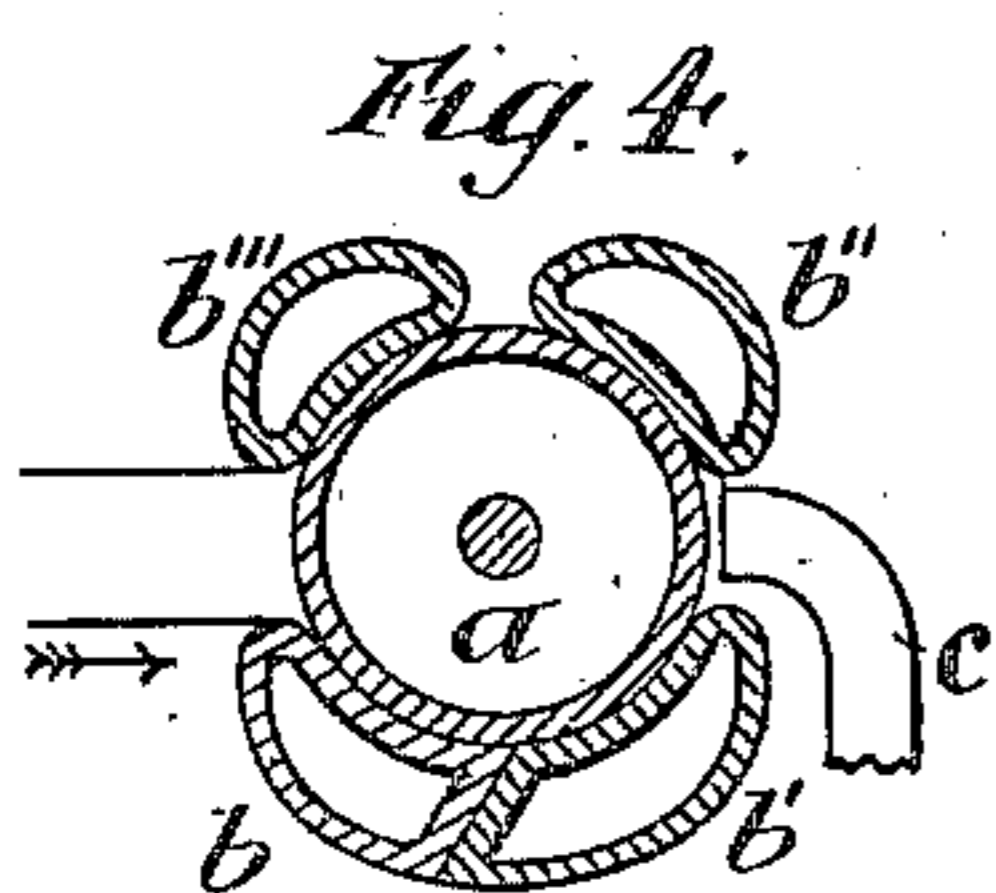
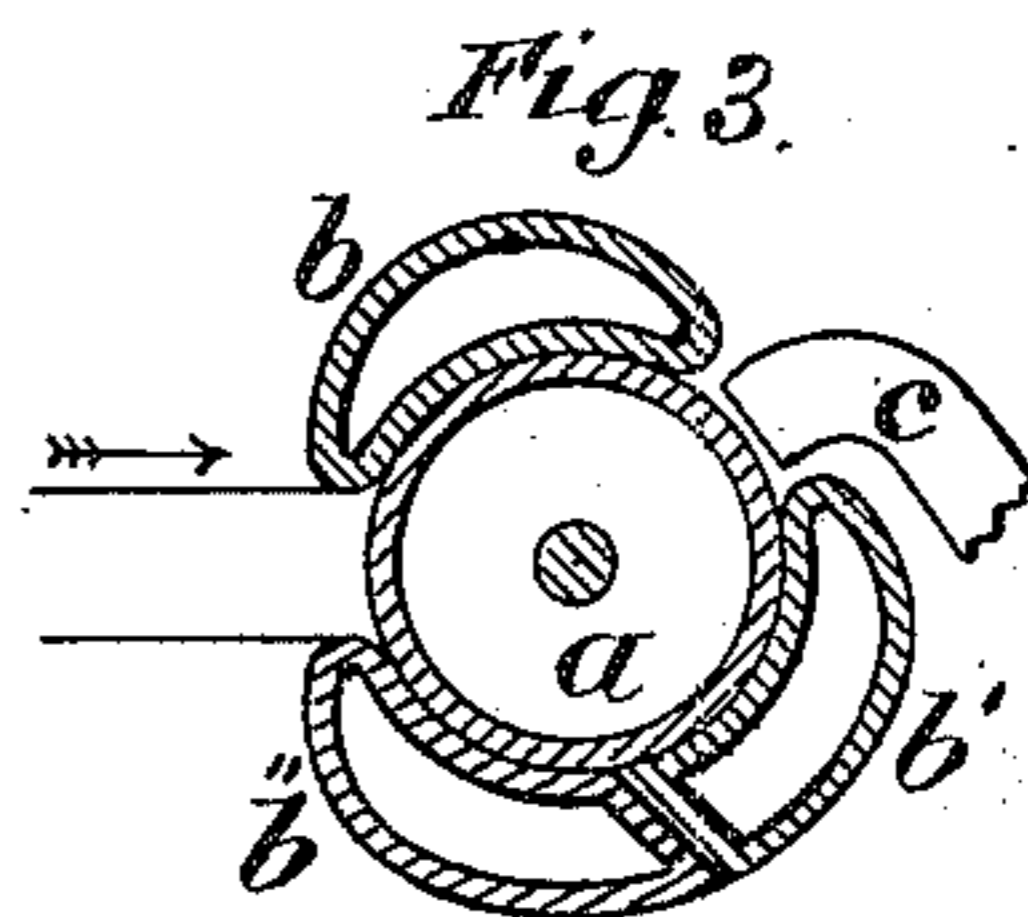
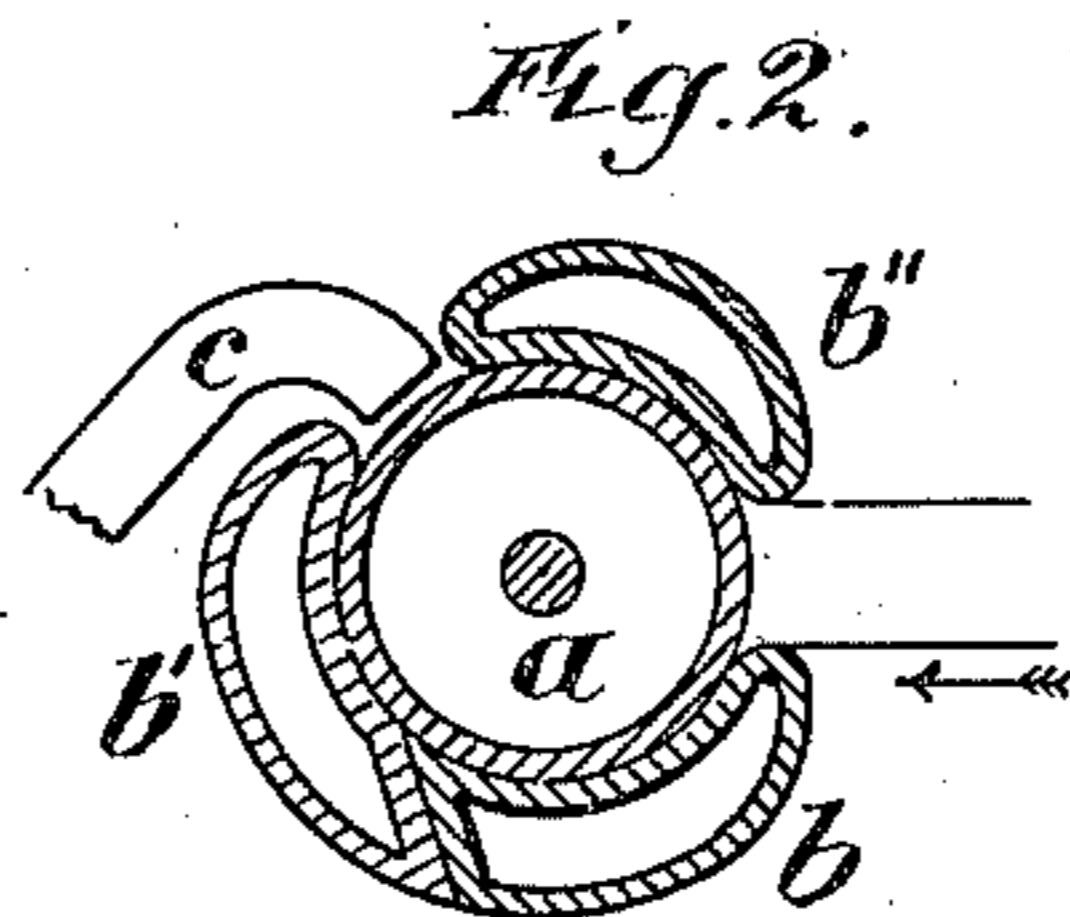
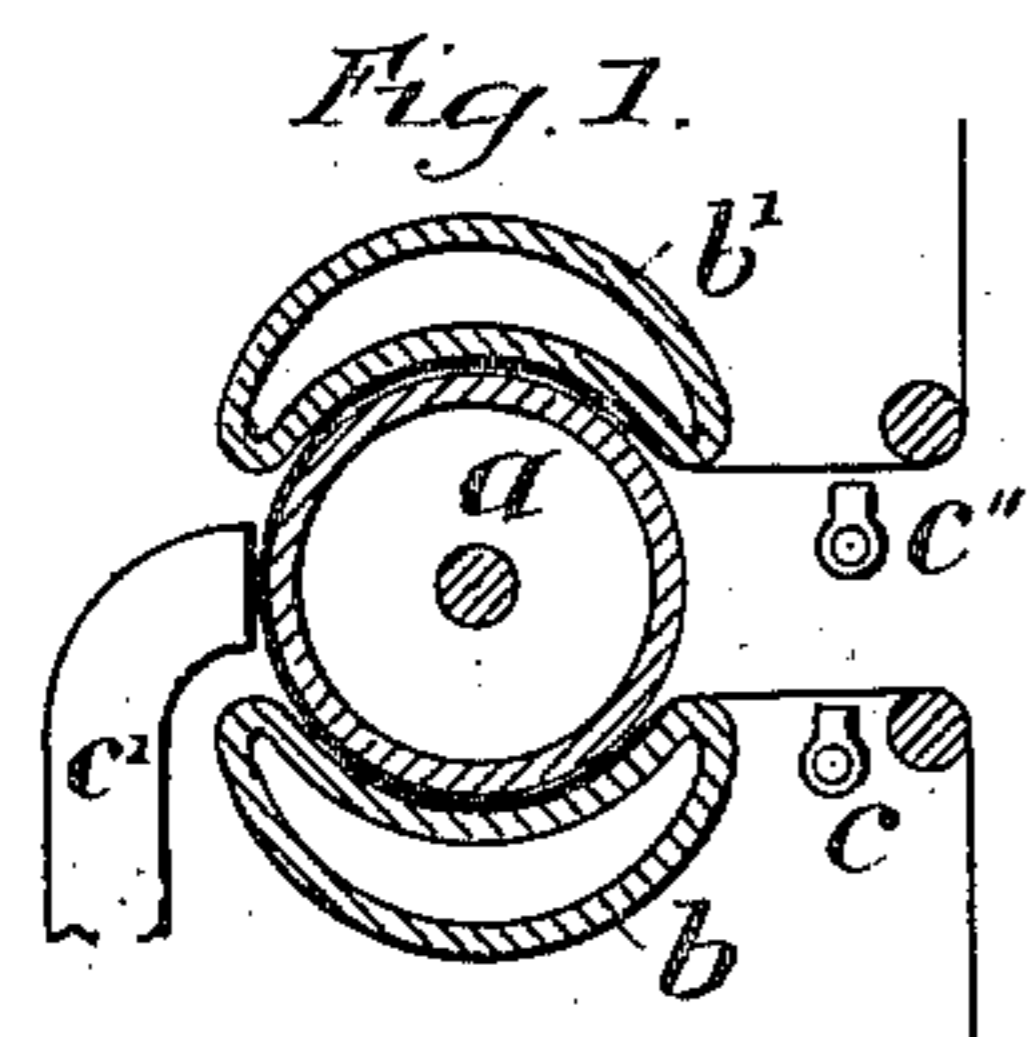


(No Model.)

D. GESSNER.  
ART OF FINISHING CLOTH.

No. 387,294.

Patented Aug. 7, 1888.



Witnesses  
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# UNITED STATES PATENT OFFICE.

DAVID GESSNER, OF WORCESTER, MASSACHUSETTS.

## ART OF FINISHING CLOTH.

SPECIFICATION forming part of Letters Patent No. 387,294, dated August 7, 1888.

Application filed May 26, 1886. Renewed June 16, 1888. Serial No. 277,352. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID GESSNER, of Worcester, county of Worcester, State of Massachusetts, have invented a new and useful Improvement in the Art of Finishing Cloth, of which the following is a specification.

The invention which is the subject of this application is an art or process whereby I propose to greatly improve the character of cloth which has been subjected to finishing in automatic pressing-machines, such as the rotary or automatic plate-machines in use.

In an application filed June 16, 1888, Serial No. 277,349, I have described the machine in which I prefer to carry out this process, and it will be unnecessary for me in this application to repeat the complete description of the machine. I will therefore only describe such parts of it as are actually essential for carrying out the process, referring to the said other application for a description of the means by which these parts are operated.

In the rotary and automatic plate-presses heretofore in use it has been customary to subject the cloth to successive pressures. Sometimes before being subjected to the first pressure the cloth has been steamed, and sometimes it has been steamed after having been subjected to the last pressure.

I propose to subject the cloth to successive pressures and subject it to steaming or moistening intermediate the pressures, and preferably, also, to subject it to steaming or moistening before the first pressure and after the last pressure, either one or both. Thereby the weight of the goods is maintained, their appearance and feeling are improved, and the fibers are so set and fixed as to produce a lasting finish.

It will also be observed from the following description that the steam or moisture is deposited or conveyed on the cloth while it is in contact with a heated surface, as the surface of the cylinder, and this constitutes a feature of my invention which may be usefully applied either in conjunction with the feature first named or otherwise.

I will now proceed to describe an apparatus by which my process may be carried out; but the apparatus for pressing and the apparatus for conveying the moisture or steam into the cloth and any other apparatus employed

may be changed or modified without departing from my process, which I do not consider as limited to any apparatus or form of apparatus.

In the drawings I have shown various arrangements of cylinder, bed-plates, and steamer by which my process can be carried out, and I have also shown an arrangement by which the invention can be applied in connection with an automatic plate-press. In all of these drawings, which relate to a rotary press, *a* is the cylinder. The bed-plates are represented by *b b'*, &c. The steamer or steamers are represented by *c c'*, &c., and the direction of the cloth is indicated by a single unbroken line.

The cylinder is made hollow, so that steam may be admitted into its interior for heating it, and each one of the bed-plates is likewise made hollow for the same purpose. The steamer employed may be of any construction suitable for supplying moisture to cloth.

In Figure 1 is shown a single cylinder in combination with two bed-plates. One steamer, *c'*, is arranged so as to throw moisture into the cloth as it passes from pressure exerted by one bed-plate to the pressure exerted by the other bed-plate. Another steamer, *c*, is arranged adjacent to the path of the cloth as it enters the first pressure, so as to throw moisture into the cloth before it is subjected to the first pressure. And the third steamer, *c''*, is arranged adjacent to the path of the cloth as it leaves the last pressure.

In the subsequent figures I have omitted the representation of any steamers before the first and after the last pressure; but it will be understood that they may be employed, if desired.

In Fig. 2 is shown a cylinder with three bed-plates arranged around it and a steamer interposed between the second and third bed-plate, so as to throw moisture into the cloth between its second and third pressures.

Fig. 3 shows a cylinder with three bed-plates arranged about it and the steamer arranged intermediate the first and second bed-plates.

Fig. 4 shows a cylinder with four bed-plates and the steamer interposed between the second and third bed-plates.

Fig. 5 shows a cylinder with four bed-plates and the steamer interposed between the third and fourth bed-plates.

Fig. 6 shows a cylinder with two bed-plates;

but in connection with this combination is employed a sheet-metal jacket which extends across the face of each bed-plate and from one bed-plate to the other. This sheet-metal jacket may be used not only with two bed-plates, as shown in this figure, but with the arrangements shown in the other figures. Where the sheet-metal jacket is employed, it will be perforated between the two bed-plates where its exterior surface is exposed, and the steamer will be applied opposite these perforations and close up to the bed-plate, so that the moisture will be thrown upon the cloth through the perforations. Where there are more than two bed-plates, I may use more than one steamer, interposing the same between the bed-plates and regulating the number in accordance with the class of goods finished.

In Fig. 7 I have shown the application of my invention to a machine in which endless traveling belts or jackets are employed for carrying the goods between the pressing surfaces. Here the belts are lettered *d d'*. It will be observed that in all these cylinder-presses the cloth is traveling through the machine (being carried along in contact with the heated surface of the cylinder) while the moisture is being applied to it, whereby each portion receives moisture for practically the same length of time, and the moisture is applied while the cloth is in contact with the heated surface of the cylinder. By this mode of operation the heat aids in diffusing the moisture in the cloth and opposes condensation, while the surface against which the cloth lies confines the moisture in the body of the cloth and assists in preventing its escape at the surface.

In Fig. 8 I have shown an arrangement in which my invention is applied to a plate-press. In this case the cloth is pressed between two plain pressing-surfaces and then again between two other pressing-surfaces, and in some instances again between a third pair of pressing-surfaces, and so on. In this drawing there are three pairs of pressing-surfaces, the first pair being provided by the upper surface of the press-plate *a* and the lower surface of press-plate *a'*, the second pair by the upper surface of *a'* and the lower surface of *a''*, and the third pair by the upper surface of *a''* and the lower surface of *a'''*. The cloth is passed between the first pair of pressing-surfaces and then around a guide-roller, *b*, at the end, back between the second pair of pressing-surfaces, and thence around the guide-roller *b'* and forward again between the third pair of pressing-surfaces. In this case I place one steamer, *c*, adjacent to the path of the cloth as it leaves the first pair of pressing-surfaces, so as to throw moisture into the cloth at that point. Another steamer may be placed adjacent to the path of the cloth as it leaves the second pair of pressing-surfaces, as at *c*.

I am aware that it is possible to conceive other arrangements in addition to those which I have illustrated in which my invention may

be carried out; but it will be unnecessary to illustrate any others, since the above are sufficient to indicate the scope of the application of the steaming or moistening of the cloth intermediate the pressures to which it is subjected in finishing.

It will be observed that the surfaces between which the cloth is pressed, as shown in the drawings, are heated surfaces—this being accomplished by filling the chambers within the cylinder and plates with steam.

Fig. 9 represents a longitudinal section of a steamer suitable for the purposes of this invention. Fig. 10 shows a cross-section of the same through the center.

*e* is a trough-shaped inclosure which is covered at its top by a perforated copper or brass plate or a wire-gauze, and preferably, also, by a felt or woolen cloth, as shown at *f*.

*g* is a steam-pipe with perforations underneath, from which the steam is discharged downward into the receptacle *e*.

*h h'* are shields or deflectors, which project with a downward inclination from the sides of the receptacle and overlap one another, as shown, so as to cause the steam to take a zigzag course in ascending.

*i* is a drip-pipe for the escape of water.

*j* is a receptacle through which the steam passes for preliminary drying before it enters pipe *g*. It is discharged into receptacle *j* from the nozzle *k* beneath the deflector *l*, by which some of the water is thrown down and runs out at the pipe *m*. The steam passes on into the pipes *n n'*.

The form of the receptacle *e* which I have shown is adapted for steaming upward, as in Fig. 6, and will be varied by giving suitable curvation to its upper portion, when desired, to steam in other positions, as in the other figures.

Among the advantages due to my process of steaming or moistening cloth intermediate the pressures to which it is subjected may be mentioned the following: The automatic presses which have heretofore been in use, and especially the rotary presses, have been objected to principally because the intense pressure to which the cloth was subjected between hot bare metallic surfaces had a tendency to deprive the cloth of its moisture to such an extent as to destroy very largely its body and weight and make it feel limp or baked and undesirable. In this respect the cloth finished in the automatic presses has been inferior to the cloth which has been finished in the old-fashioned paper-presses, in which the moisture of the paper and the contact between the paper and the cloth and the subsequent cooling while under pressure secured in the finished cloth superior qualities in the respects already referred to. By my invention the cloth, after being subjected to the first hot-pressure, and being deprived thereby of moisture, instead of passing directly in the same state to a subsequent pressure, is treated by the steamer or

moistener, so as to supply the moisture which had been extracted by the first hot pressure, and thus maintain the qualities of the cloth.

It will be understood that in the operation of the machine, whether it be a rotary press or an automatic plate-press, the flow of steam onto the cloth should be stopped wherever the feed or travel of the cloth through the machine stops, so that the cloth shall never be steamed or moistened while in a state of rest, but shall always be in motion past the steamer, the object being to prevent the formation of any spots on the cloth by too great moistening at any one point.

The object is that the moisture or dampness shall be applied to the cloth uniformly throughout.

I am aware of English Patent No. 2,039 of 1854. I do not desire to claim the process there set forth. One feature of distinction is that the said English patent contemplates no pressing after pressing and steaming. The only operation succeeding what is indicated as a possible steaming is a mangling operation, which is well known as producing an entirely different effect from pressing. Another feature of distinction is that the operation is interrupted immediately after the pressing by winding the cloth on a winding-roller, which has to be transferred to another position in the machine and be unwound again before the possible steaming and mangling operations can take place. Other features might be mentioned more or less affecting practical operation; but the above will be sufficient to distinguish it from my claims.

I am also aware that English Patent No. 3,230 of 1871 was issued before my invention. Said patent suggests as a modification cylinders removed from each other and each provided with a bed plate. A steamer is placed midway between two of the cylinders at a distance from each, and the cloth is conducted over the steamer. The cylinder and bed-plate succeeding the steamer are cold or cooled by cold water, intended to give a cold pressure by the cylinder and bed-plate to the cloth. This operation would be impracticable and detrimental to the cloth. Among other reasons,

the humidity contained in the heated cloth when it reached the cold cylinder and bed-plate would condense on the cold surfaces, causing the cloth to stick fast, clog the machine, and to be stained, puckered, stretched, and eventually torn by the revolving surface of the cylinder moving across the fixed surface of the bed-plate. The hot moisture from the steamer would only increase the difficulty.

What I claim, and desire to secure by Letters Patent, is—

1. The art or process of finishing cloth, consisting of subjecting the same to a hot-pressing and then to a steaming or moistening, and subsequently to another hot-pressing, substantially as described.

2. The art or process of finishing cloth, consisting of subjecting the same to a steaming or moistening and then to a hot-pressing, and then to steaming or moistening, and then to another hot-pressing, substantially as described.

3. The art or process of finishing cloth, consisting of subjecting the same to a steaming or moistening, then to a hot-pressing, then to a second steaming or moistening, then to a second hot-pressing, and then to a third steaming or moistening, substantially as described.

4. The art or process of finishing cloth, consisting of subjecting the same to a hot-pressing, then to a steaming or moistening, then to a second hot-pressing, and then to a second steaming or moistening, substantially as described.

5. The art or process of finishing cloth, which consists of subjecting the same to a steaming or moistening after it has received a pressing and while it is traveling in contact with a heated surface, substantially as described.

6. The art or process of finishing cloth, consisting of subjecting the same to a pressing and then to a steaming or moistening, and then to a hot-pressing, substantially as described.

DAVID GESSNER.

Witnesses:

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D. H. DRISCOLL.