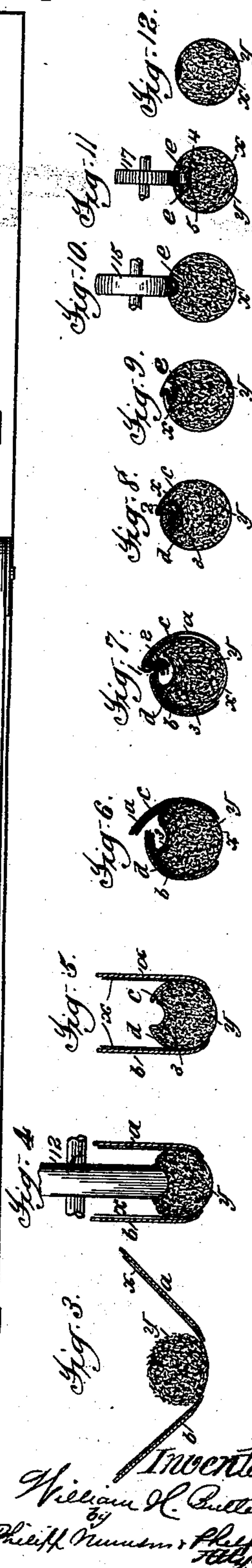
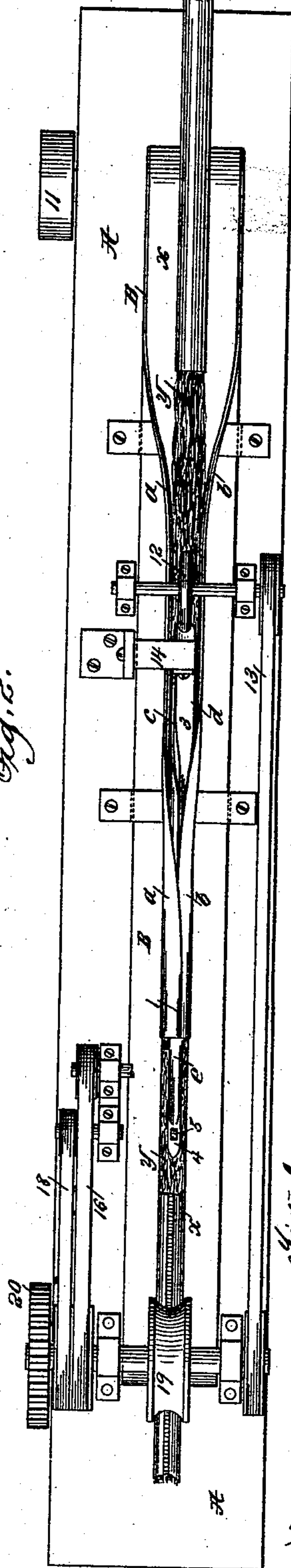
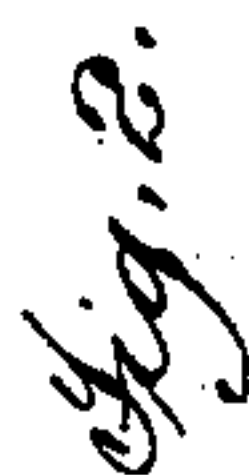


W. H. BUTLER.
CIGARETTE MACHINE.

No. 546,638.

Patented Sept. 17, 1895.



Attest:
Geo. H. Roth
S. Winthab.

Inventor
William H. Butler
34
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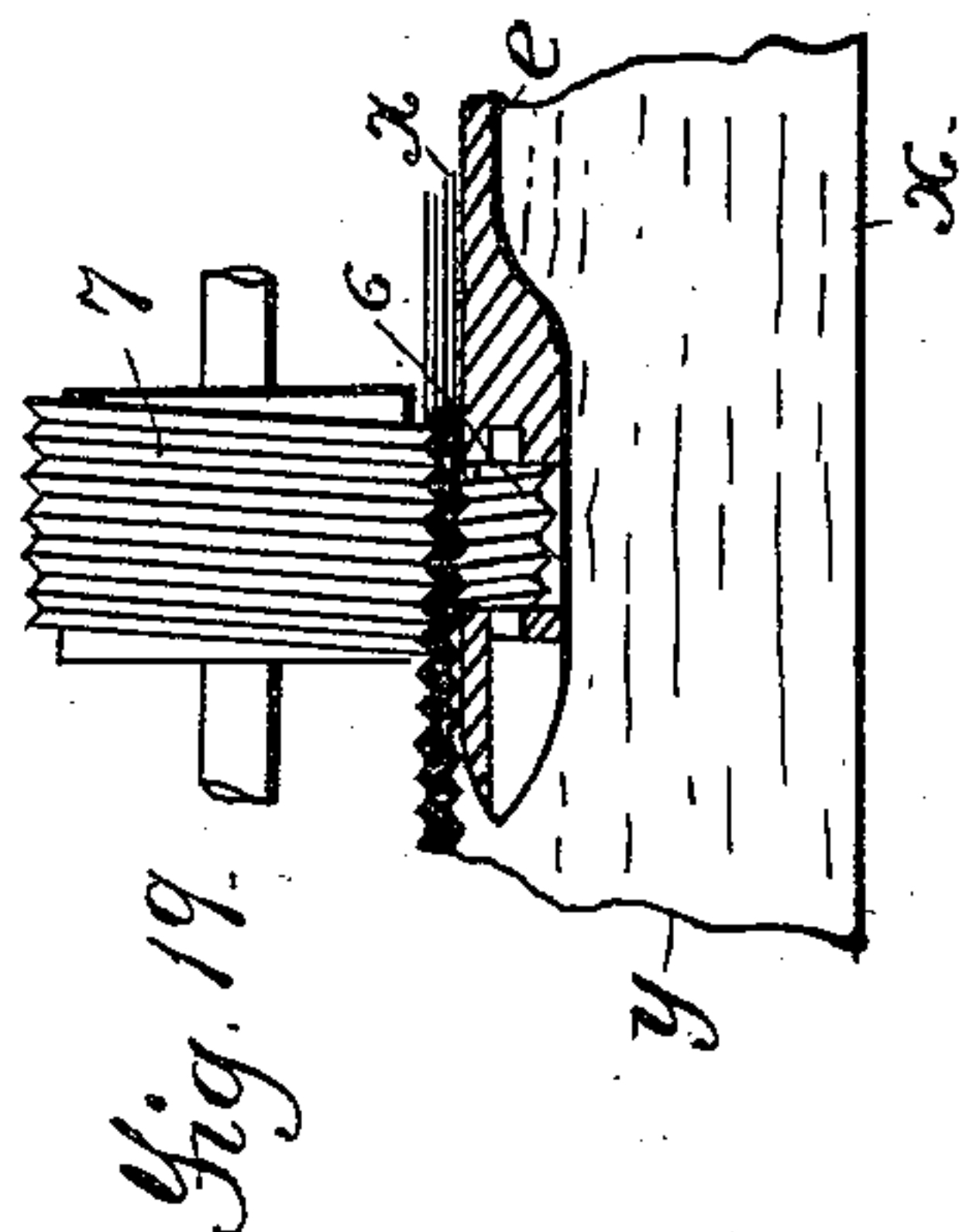
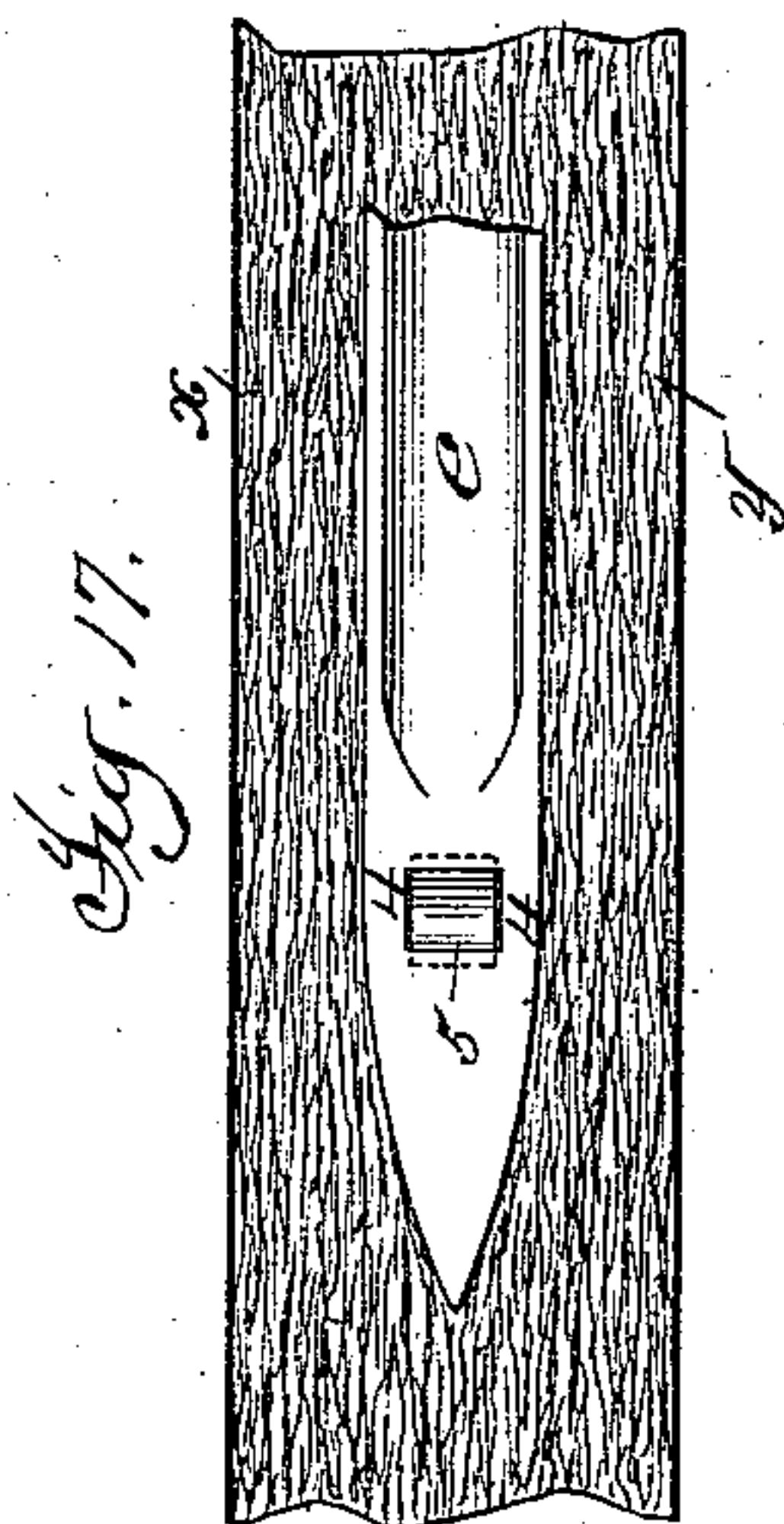
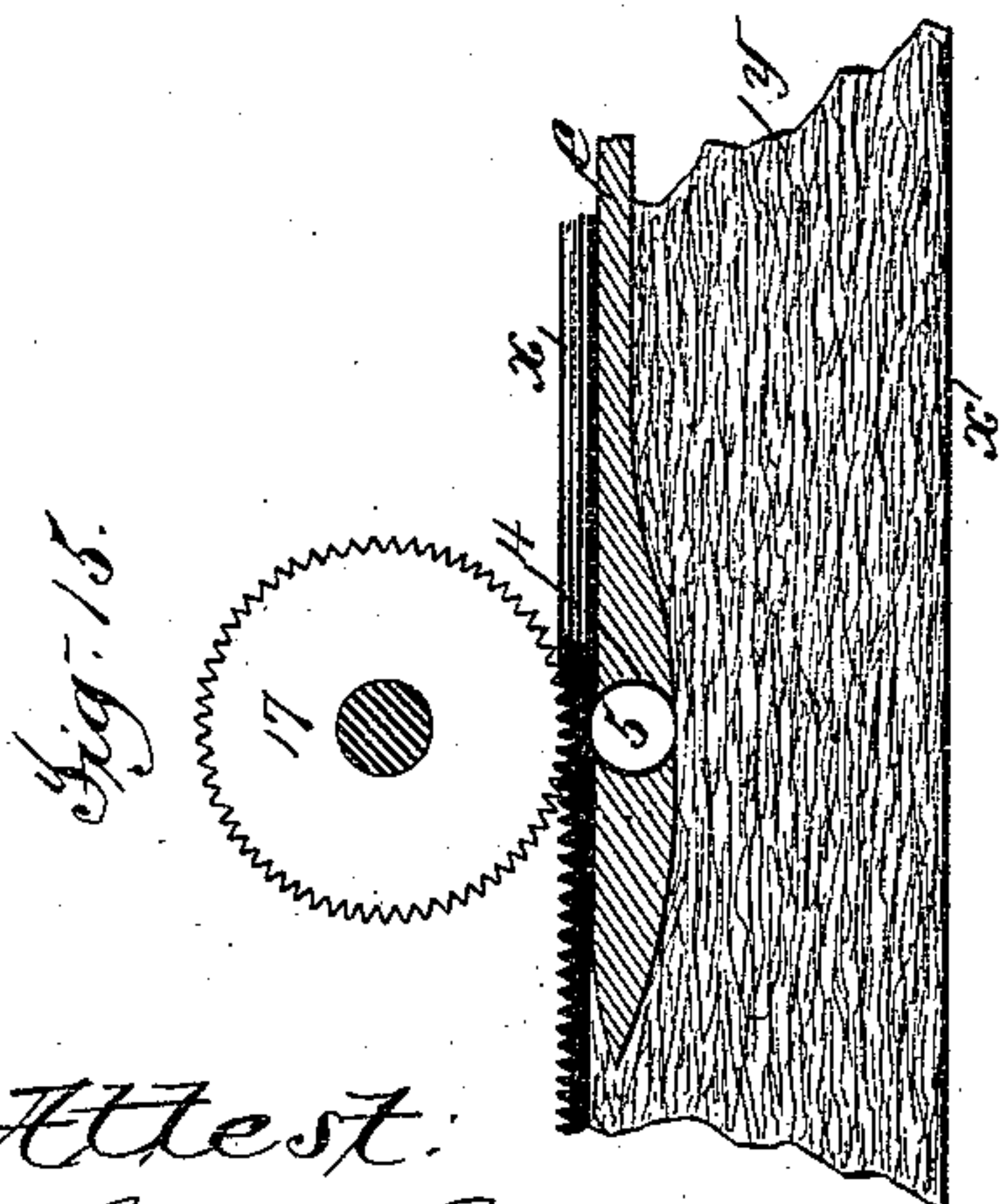
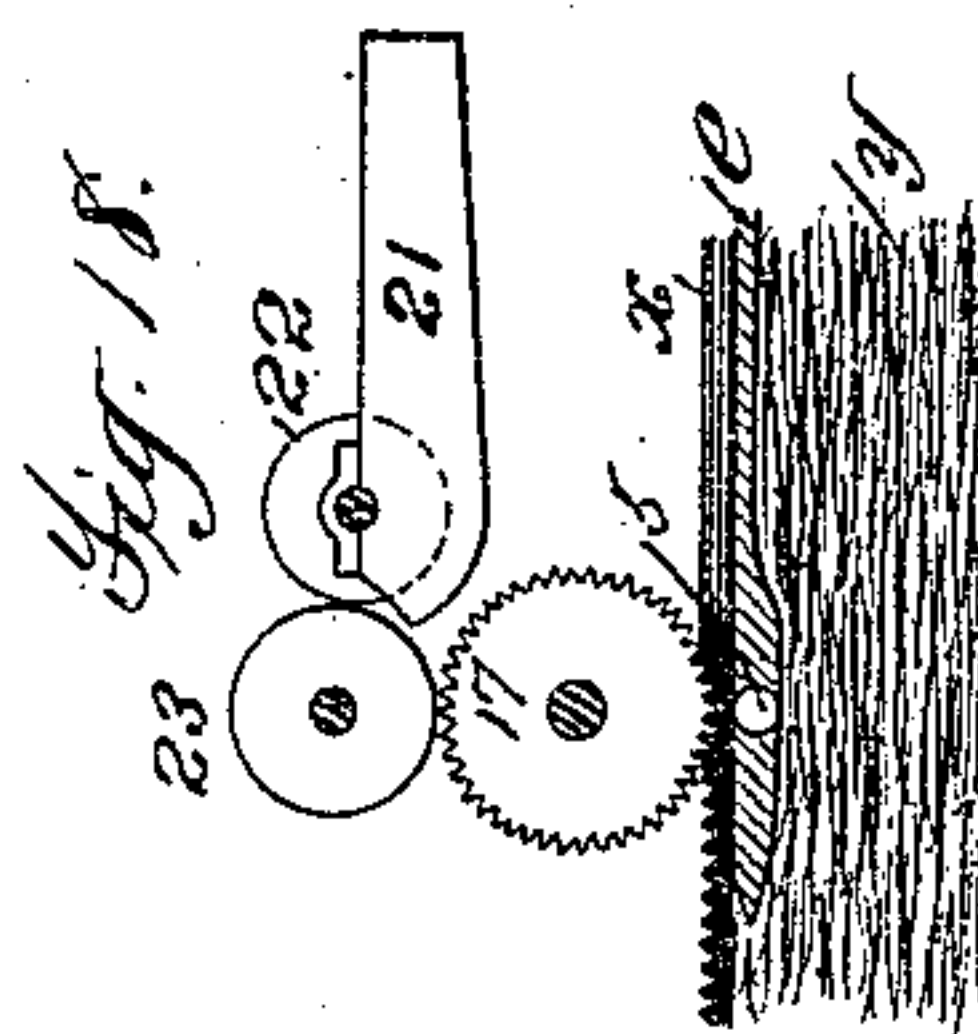
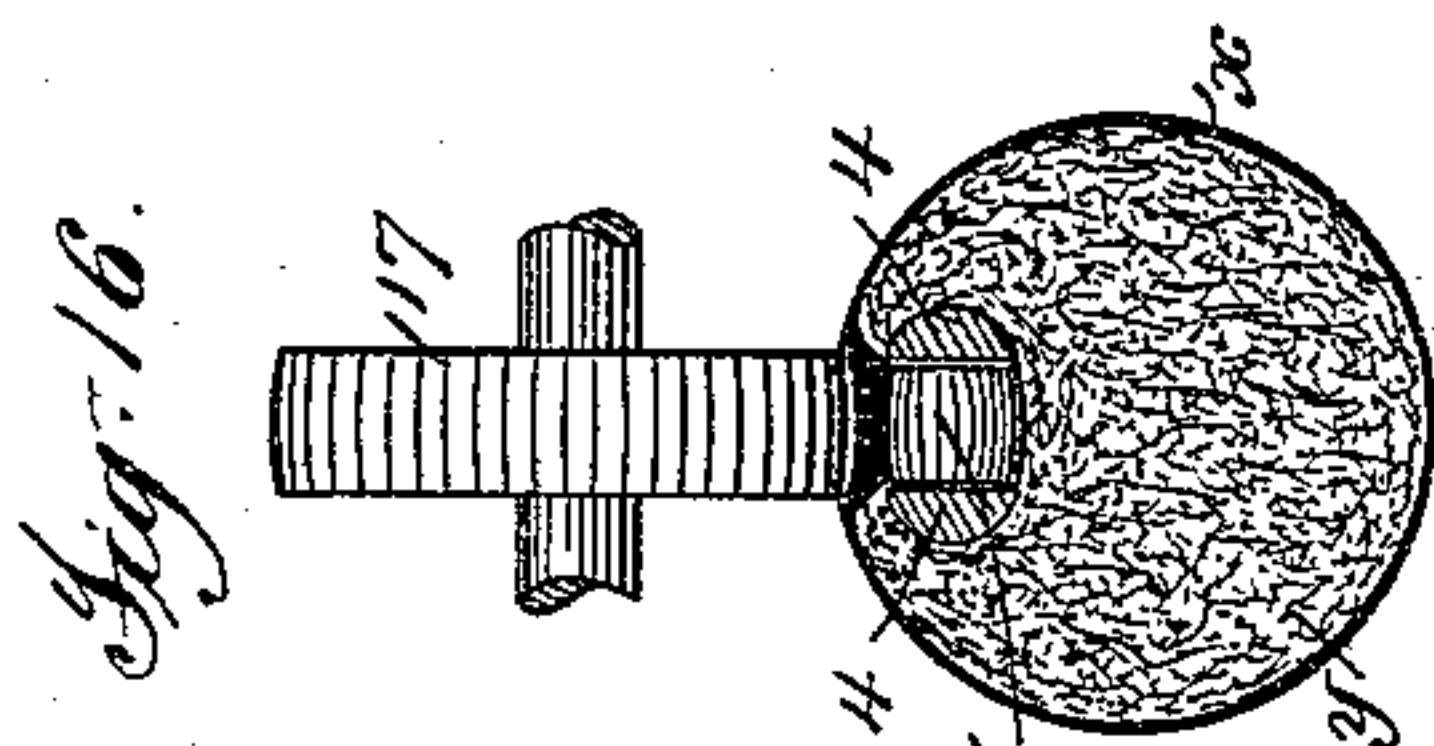
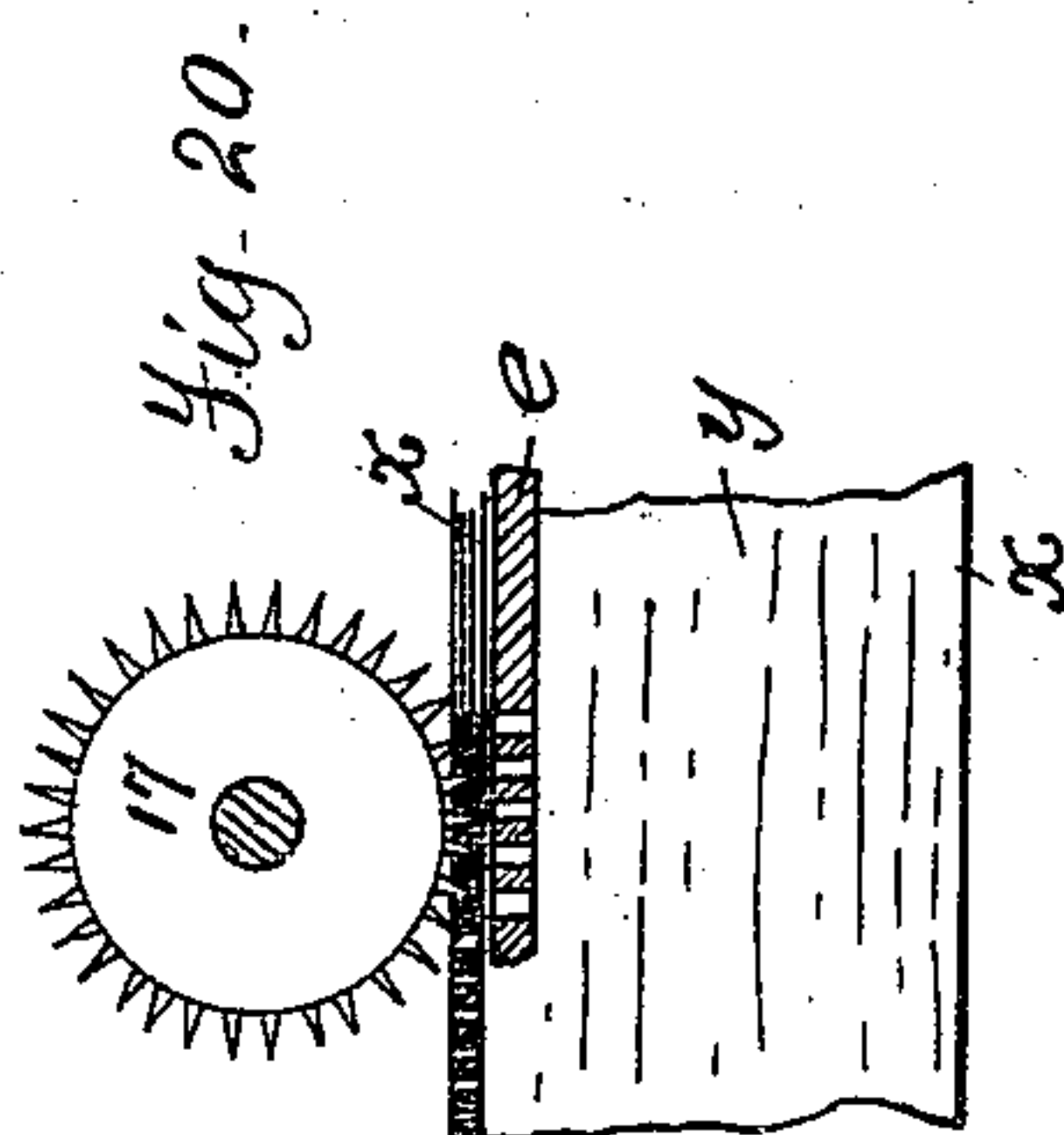
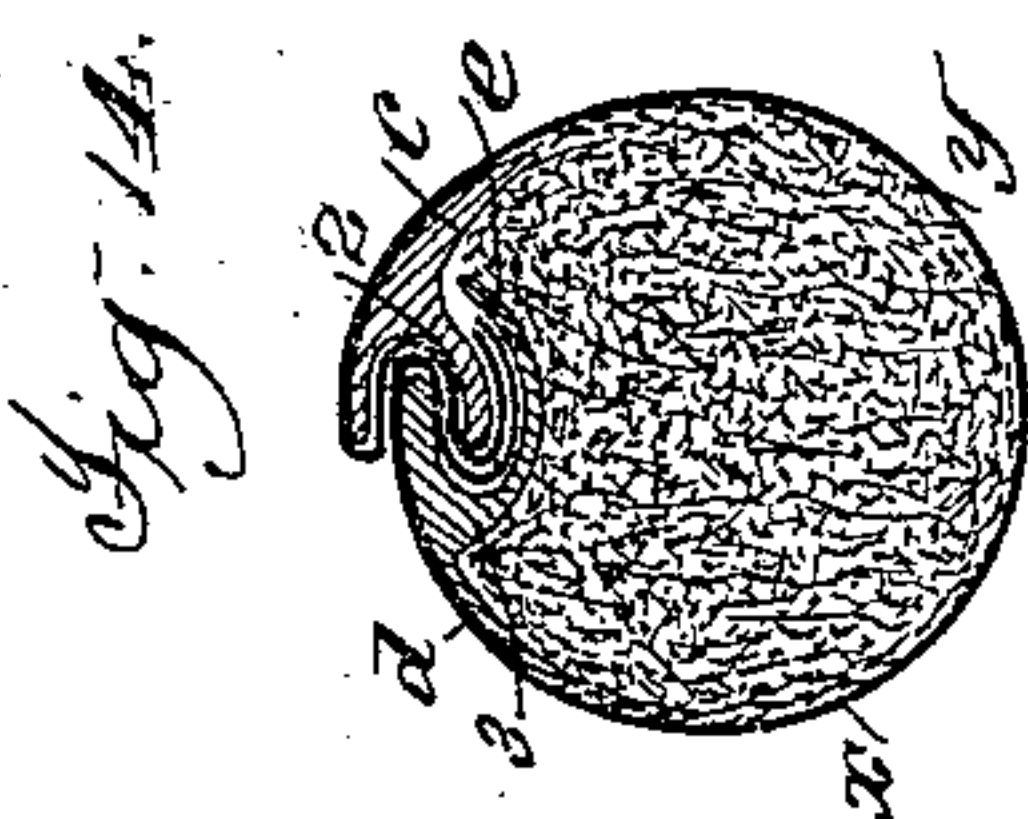
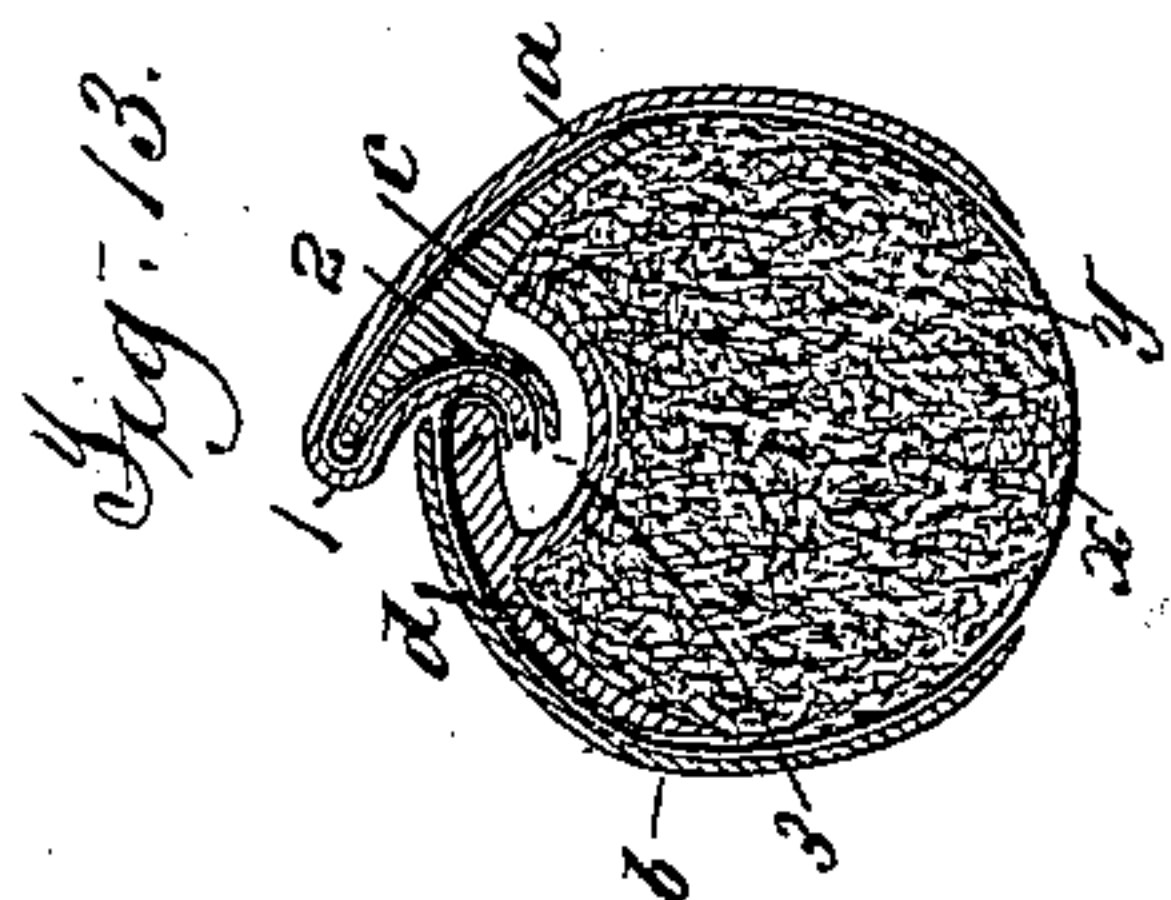
(No Model.)

2 Sheets—Sheet 2.

W. H. BUTLER.
CIGARETTE MACHINE.

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Patented Sept. 17, 1895.



Attest:
Geo. H. Potts.
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UNITED STATES PATENT OFFICE.

WILLIAM H. BUTLER, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE BON-SACK MACHINE COMPANY, OF SALEM, VIRGINIA.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 546,638, dated September 17, 1895.

Application filed May 13, 1892. Serial No. 432,914. (No model.) Patented in France January 3, 1894, No. 235,268; in Italy February 23, 1894, No. 35,795/188; in Trinidad June 26, 1894; in Barbadoes July 6, 1894, No. 81; in Cape Colony July 12, 1894, No. 376 or 6/678; in Natal July 16, 1894; in South African Republic July 18, 1894, No. 675, and in Austria June 14, 1895, No. 45/2,150.

To all whom it may concern:

Be it known that I, WILLIAM H. BUTLER, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Cigarette-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same, and for which I have obtained Letters Patent in France, No. 235,268, dated January 3, 1894; in Italy, No. 35,795/188, dated February 23, 1894; in Trinidad, dated June 26, 1894; in Barbadoes, No. 81, dated July 6, 1894; in Cape Colony, No. 276 or 6/678, dated July 12, 1894; in Natal, dated July 16, 1894; in South African Republic, No. 675, dated July 18, 1894, and in Austria, No. 45/2,150, dated June 14, 1895.

This invention relates to that class of cigarette-machines in which the wrapper in the form of a continuous web is wrapped around a continuous filler and its edges united, after which the wrapper and filler therein are cut into suitable lengths to form cigarettes.

In machines of this class the edges of the wrapper have generally been united by being overlapped and secured by pasting, and difficulty has been found in drawing and securing the wrapper about the tobacco with sufficient tension to make the cigarette as solid as desired.

In a companion application, Serial No. 432,334, filed May 9, 1892, I have described and claimed, broadly, a method and machine by which the wrapper is secured by turning the edges of the wrapper outwardly or inwardly and rolling or folding them together and then securing the edges by pressing, crimping, indenting, or perforating them and applying paste, and certain features of construction in machines for thus rolling or folding the edges of the wrapper together and securing them by pressing, crimping, indenting or perforating them, whether paste be employed or not.

The present invention relates to machines of this general class, and particularly to such machines in which the edges of the wrapper

are turned inwardly; and the invention consists in various constructions and combinations of parts, all of which will be more particularly described in the following specification, and pointed out in the claims.

For a full understanding of my invention a detailed description of constructions embodying the same in its preferred form will now be given in connection with the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical sectional elevation of so much of a cigarette-making machine as is necessary to illustrate the application of the present invention thereto. Fig. 2 is a plan view of the same. Figs. 3 to 11 are cross-sections on, respectively, the lines 3 to 11 of Fig. 1, looking to the left. Fig. 12 is a cross-section of the completed cigarette. Figs. 13 and 14 are partial cross-sections corresponding to Figs. 7 and 8 on a much enlarged scale. Figs. 15, 16, and 17 are details of the crimping devices on a similar scale, Fig. 15 being a longitudinal section similar to Fig. 1, Fig. 16 a cross-section similar to Fig. 11, and Fig. 17 a plan with the outside crimping-roll and wrapper removed. Fig. 18 shows a modification employing pasting devices. Fig. 19 shows a crimping-worm construction, and Fig. 20 shows a modification employing perforating devices.

Referring to said drawings, A is the bed-plate or table of the machine which serves to support the operating parts.

B is the carrying-belt by which the cigarette-wrapper *x* and filler *y* are advanced, the filler passing onto the wrapper from a filler-forming mechanism of any suitable form or being formed by hand. The belt B is carried by belt-pulleys 10, driven in any suitable manner, a pulley 11 on one belt-roll 10 being shown for this purpose.

As the wrapper with the filler thereon is advanced by the belt B, the side edges of the wrapper are turned upward by exterior side guides *a b* on opposite sides, and the filler is pressed and compacted by means of roller 12, lying inside the guides, and the turned-up

edges of the wrapper, being driven by a belt 13, as shown, or in any other suitable manner. The roller 12 is preferably convex, as shown, and arranged to press the top of the filler in
5 and form a recess for the interior support, against which the edges of the wrapper are secured.

It will be understood that the use of this convex roll to press in the top of the filler and
10 to form a recess therein is not limited to a construction employing an interior support or to one in which the edges of the wrapper are turned inwardly, but that it may be used in other constructions, and is thus claimed.

15 In advance of the pressing-roller 12 a bracket with an overhanging arm 14 is mounted on the frame, and this arm 14 carries the interior guides, which coact with the exterior guides *a b* to turn the edges of the wrapper
20 inward and fold or roll them together and form the interior support against which the edges are secured. The interior guides consist of two plates *c d*, between which and the exterior side guides *a b* the edges of the wrapper
25 lie, and the exterior and interior guides are gradually curved inward together over the filler, so as to bring the edges of the wrapper together and overlap them.

The exterior side guide *a* is provided with
30 a wing 1, gradually curved about and inside of the outer edge of the interior guide *c*, and the latter guide is provided with a curved wing 2, gradually extended inward and toward the opposite interior guide *d*, this wing
35 coacting with the wing 1 to curve one edge of the wrapper inward and toward the opposite guide *d*. The guide *d* is provided with a wing 3, gradually curved outward upon the interior of the guide and then inward
40 toward and under the wing 2 of the opposite guide *c*, this wing coacting with the wings 1 and 2, so that both the edges of the wrapper are bent inward and curved toward the interior guide *d* and then in the opposite direc-
45 tion, so as to be folded or rolled together.

The operation and construction of the devices for thus folding or rolling the edges of the wrapper will be understood from Figs. 6 to 8 and the enlarged details 13 and 14, from
50 which it will be seen that the wings forming the folding or rolling devices lie in the recess formed in the top of the filler by the roller 12, as previously described. The guides *a b c* terminate when the edges of the wrapper
55 have been rolled or folded together, as shown in Figs. 8 and 14; but the wing 3 of the guide *c* is continued, and this wing is extended about the top of the filler, so as to form a concave finger *e*, resting on the filler within the
60 recess formed by the roller 12, and forming the interior support against which the edges of the wrapper are secured, this interior support *e* thus forming a chamber in the cigarette outside the filler, in which the devices
65 carried by the interior support for securing the edges of the wrapper are placed.

In Fig. 9 the edges of the wrapper folded

or rolled together are shown as lying on the interior support *e* ready for subsequent operations by which the edges are compressed 70 and secured. Just in advance of the ends of the guides *a b c d* is mounted a pressure-roller 15, driven, as shown, by a belt 16, or in any other suitable manner, this pressure-roller being preferably convex and coacting with 75 the interior support *e* to press down flat the folded or rolled edges of the wrapper, as shown in Figs. 1 and 10. It will be seen that this roller 15 in pressing the folded or rolled edges of the wrapper downward upon and 80 into the concave support *e* also draws the wrapper tightly about the filler, thus aiding in securing the result desired of a firm solid cigarette. It may be found that the pressure of this roller is sufficient to secure the wrap- 85 per without other devices, and I may use only this roller in connection with the support to secure the wrapper, the roller and support being suitably formed to act as seam-closing devices; but I prefer to use the roll 15 only for 90 pressing down the edges of the wrapper and to provide an independent crimping, indenting, or perforating device coacting with the support *e* in advance of the roll. I may use any suitable device for this purpose, and the 95 support may be plain or crimped, indented, grooved, roughened, or otherwise formed so as to coact with a suitable crimping, indenting, or perforating roller or worm outside the wrapper, or the outside roller and support 100 may be formed in any suitable manner so that crimping, indenting, or perforating of the wrapper-seam is secured by the construction of the support coacting with the roller. I prefer, however, to use the construction 105 shown, in which the support *e* is provided near its end with a recess or holder 4, in which is mounted to run freely a small roller 5, preferably mounted, as shown, without a shaft, so as to be held in position simply by the walls of 110 the recess or holder 4. With this roller 5 coacts a roller 17, mounted above the cigarette and driven positively by a belt 18 or in any other suitable manner. The rolls 5 17 may be formed in any suitable manner so as to crimp, 115 indent, or perforate the edges of the wrapper and thus secure them together, both of the rolls being roughened, serrated, or provided with pins for this purpose, or either one of the rolls may be plain. I have shown the rolls as both 120 toothed, so as to crimp the wrapper.

The construction and operation of the rolls 5 17 will be understood from Fig. 11 and the enlarged details, Figs. 15 to 17. It will be understood that the roller 5 may be of any suit- 125 able form other than that shown. I may use a roller in the form of a ball held in the recess or holder 4 by the edges of the same and coacting with the roll 17 in the same manner as with the roller shown, or I may mount in the 130 holder 4 so as to rotate transversely to the path of the cigarette a small worm 6, provided with a thread of a pitch preferably corresponding to the travel of the cigarette, co-acting with

a similar worm 7, mounted in the position of the roll 17, the worm 7 being rotated by any suitable means in a direction transverse to the path of the cigarette, as shown in Fig. 19, or the worm carried by the support may be used with a plain roller.

In Fig. 20 I have shown a modified construction in which the support *e* is provided in place of the holder 4 and roller 5 therein with a series of small perforations registering with pins or sharp-pointed teeth, with which the roll 17 is provided in this construction. With these devices for perforating the edges of the wrapper pasting mechanism may be used, as shown in Fig. 18, arranged to deliver a small quantity of paste to the pins or teeth of the roll 17, as previously described.

The continuous cigarette is advanced from the folding, crimping, indenting, or perforating device by the belt B, and any suitable feeding mechanism coacting therewith or independent thereof, this feeding mechanism being preferably so constructed as to hold the cigarette firmly, so as to secure its movement through the folding devices. I have shown a grooved roller 19, coacting with belt-roll 10, and from the shaft of which the rolls 12 15 17 are driven, this shaft being driven by any suitable means, a gear 20 being shown for this purpose.

While it will be found that the wrapper is secured firmly without pasting by the devices shown, it is evident that I may use paste, if desired, and that my invention provides a very simple, convenient, and efficient machine for making pasted cigarettes. Thus in the construction shown it is necessary only to mount suitable pasting devices in position to deliver paste to the roll 17 or other crimping, indenting, or perforating device, the paste being transferred to the wrapper and pressed therein by means of such device, a very small amount of paste being thus sufficient to secure a strong seam. In Fig. 18 I have shown such a construction employing the paste-fountain 21, fountain-roll 22, and paste-roll 23.

It is evident that many modifications may be made in the machine shown as embodying my invention, and I am not to be limited to the specific construction and arrangement of the devices shown.

What I claim is—

1. The combination with feeding devices for advancing a continuous cigarette wrapper and filler, of an interior support, folding devices for folding the wrapper over the filler and support with its edges turned inwardly and rolled or folded together, a pressing device co-acting with the support to press down the edges, and a crimping, indenting or perforating device co-acting with the support to secure the edges, substantially as described.

2. The combination with feeding devices for advancing a continuous cigarette wrapper and filler, of an interior support, folding devices for folding the wrapper over the filler and support with its edges turned inwardly

rolled or folded together, a crimping, indenting or perforating device co-acting with the support to secure the edges, and pasting devices for applying paste to said crimping, indenting or perforating device, substantially as described.

3. The combination with feeding devices for advancing a continuous cigarette wrapper and filler, of a convex roll for pressing down the filler and forming a recess therein, folding devices for folding the wrapper over the filler and rolling or folding its edges together, and devices for securing the edges, substantially as described.

4. The combination with feeding devices for advancing a continuous cigarette wrapper and filler, of a convex roll for pressing down the filler and forming a recess therein, an interior support in said recess, folding devices for folding the wrapper over the filler and support, and devices coacting with said support to secure the edges, substantially as described.

5. The combination with feeding devices for advancing a continuous cigarette wrapper and filler, of a concave support, folding devices for folding the wrapper over the filler and support and rolling or folding its edges together, and a roll pressing the edges of the wrapper into the concave support, substantially as described.

6. The combination with feeding devices for advancing a continuous cigarette wrapper and filler, of convex roll 12 for pressing down the filler and forming a recess therein, an interior support in said recess, folding devices for folding the wrapper over the filler and support with the edges turned inwardly on said support, and devices co-acting with said support to secure the edges, substantially as described.

7. The combination with feeding devices, of exterior side guides *a, b*, one of said guides being provided with the inwardly curved wing 1, and interior guides *c, d* provided with wings 2, 3 co-acting with said wing 1, substantially as described.

8. The combination with feeding devices, of exterior side guides *a, b*, one of said guides being provided with the inwardly curved wing 1, interior guides *c, d* provided with wings 2, 3 co-acting with said wing 1, and interior support *e* below the rolled or folded edges, substantially as described.

9. The combination with feeding devices, of exterior side guides *a, b*, one of said guides being provided with the inwardly curved wing 1, interior guides *c, d* provided with wings 2, 3 co-acting with said wing 1, interior support *e* below the rolled or folded edges, and devices co-acting with said support to secure the edges, substantially as described.

10. The combination with feeding devices, of exterior side guides *a, b*, one of said guides being provided with inwardly curved wing 1, interior guides *c, d*, having wings 2, 3 co-acting with said wing 1 to turn the edges inwardly and roll or fold them together, inte-

rior support *e* formed by an extension of said wing 3, and devices co-acting with said support to secure the edges of the wrapper, substantially as described.

- 5 11. The combination with feeding devices, of convex roller 12 for forming a recess in the filler, exterior side guides *a*, *b*, one of said guides being provided with an inwardly curved wing 1, interior guides *c*, *d*, having
10 wings 2, 3 co-acting with said wing 1 to turn the edges inwardly and roll or fold them together, interior support *e* lying in the recess

formed by said roller 12, a roll carried by said support and a roller outside the wrapper co-acting with said roll on the support to crimp, 15 indent or perforate the edges, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WM. H. BUTLER.

Witnesses:

J. M. W. HICKS,
C. J. SAWYER.