

(No Model.)

O. H. HICKS.
PERFORATED PAPER.

No. 405,412.

Patented June 18, 1889.

Fig. 1.

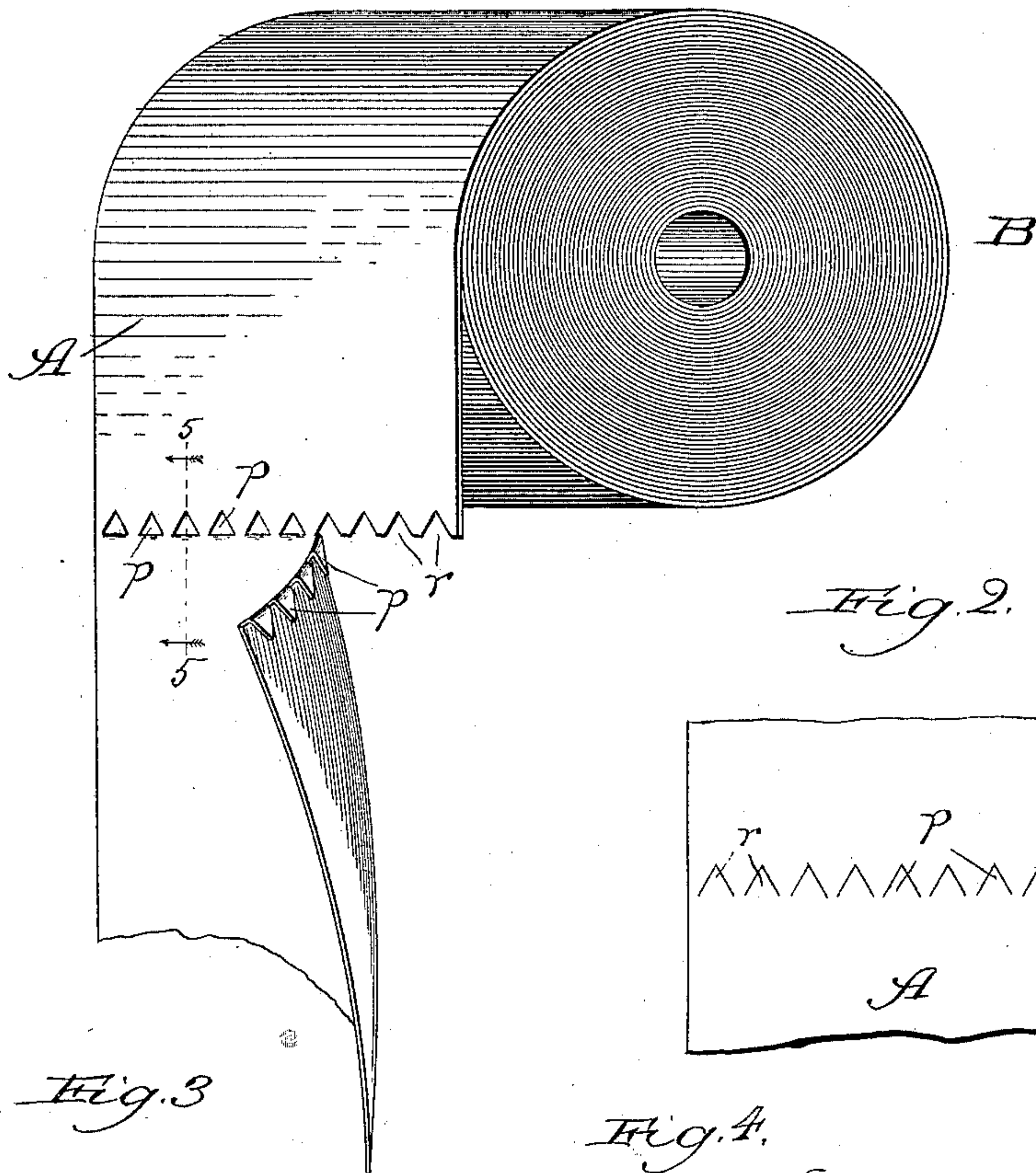


Fig. 2.

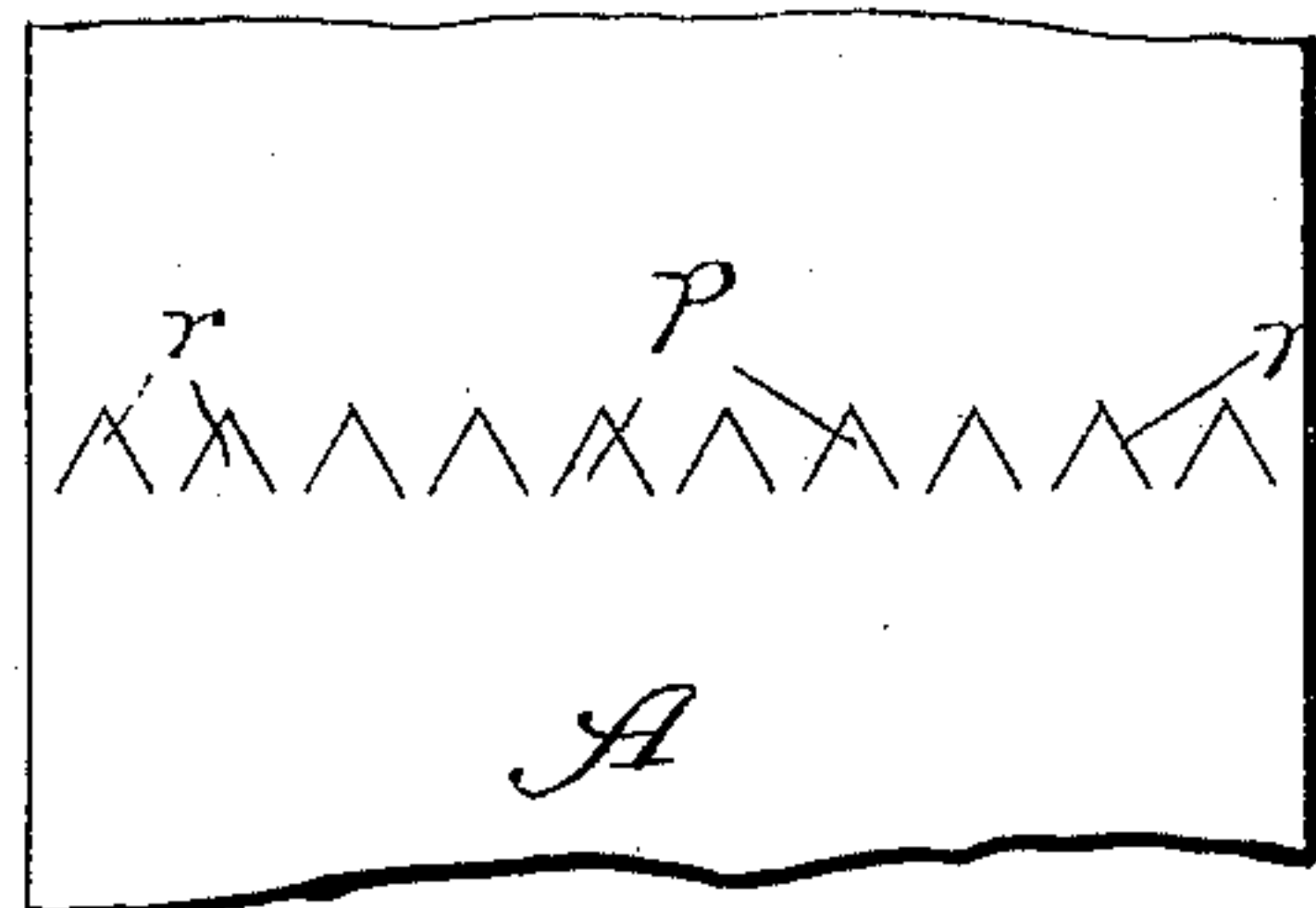


Fig. 3.

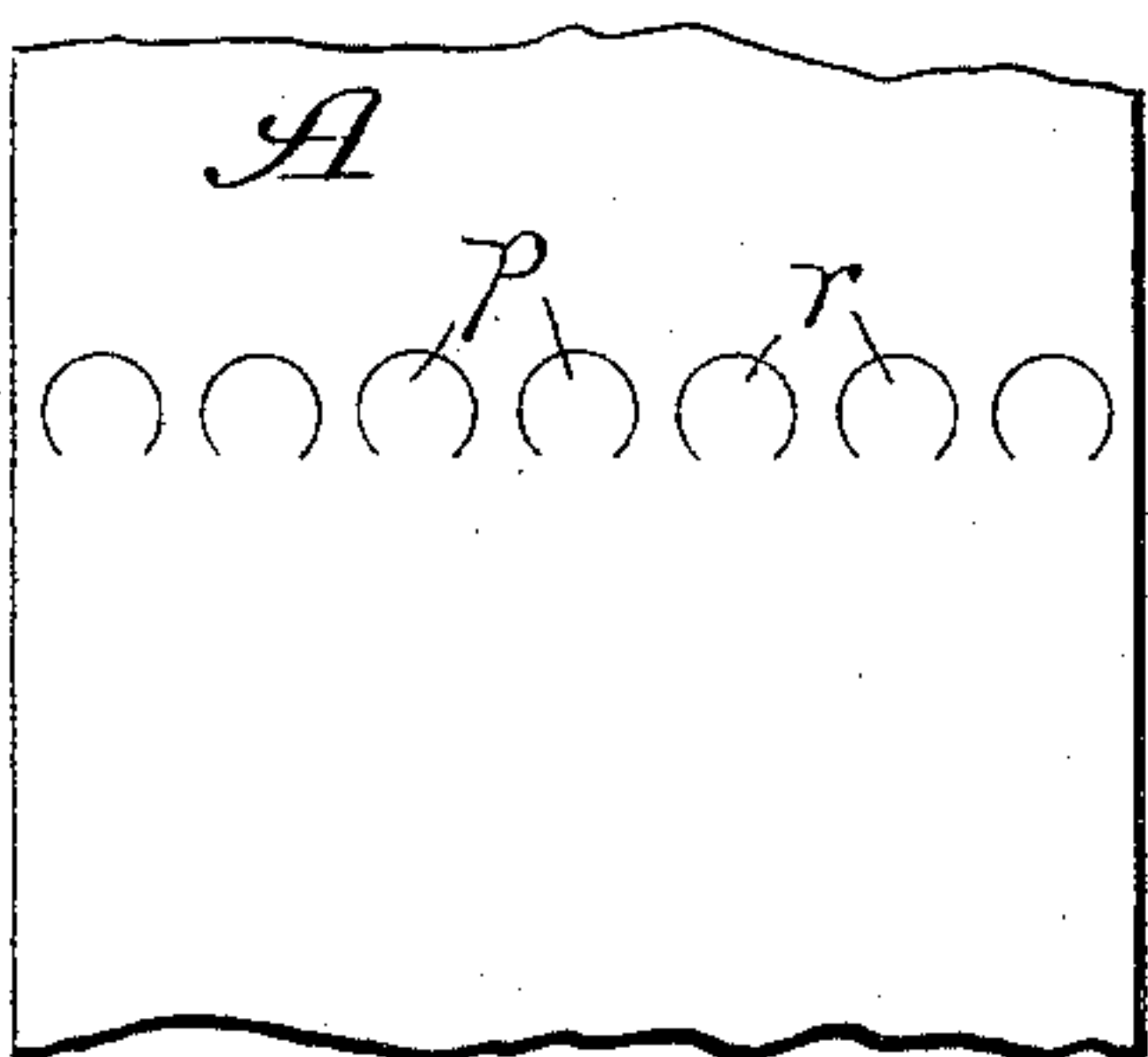


Fig. 4.

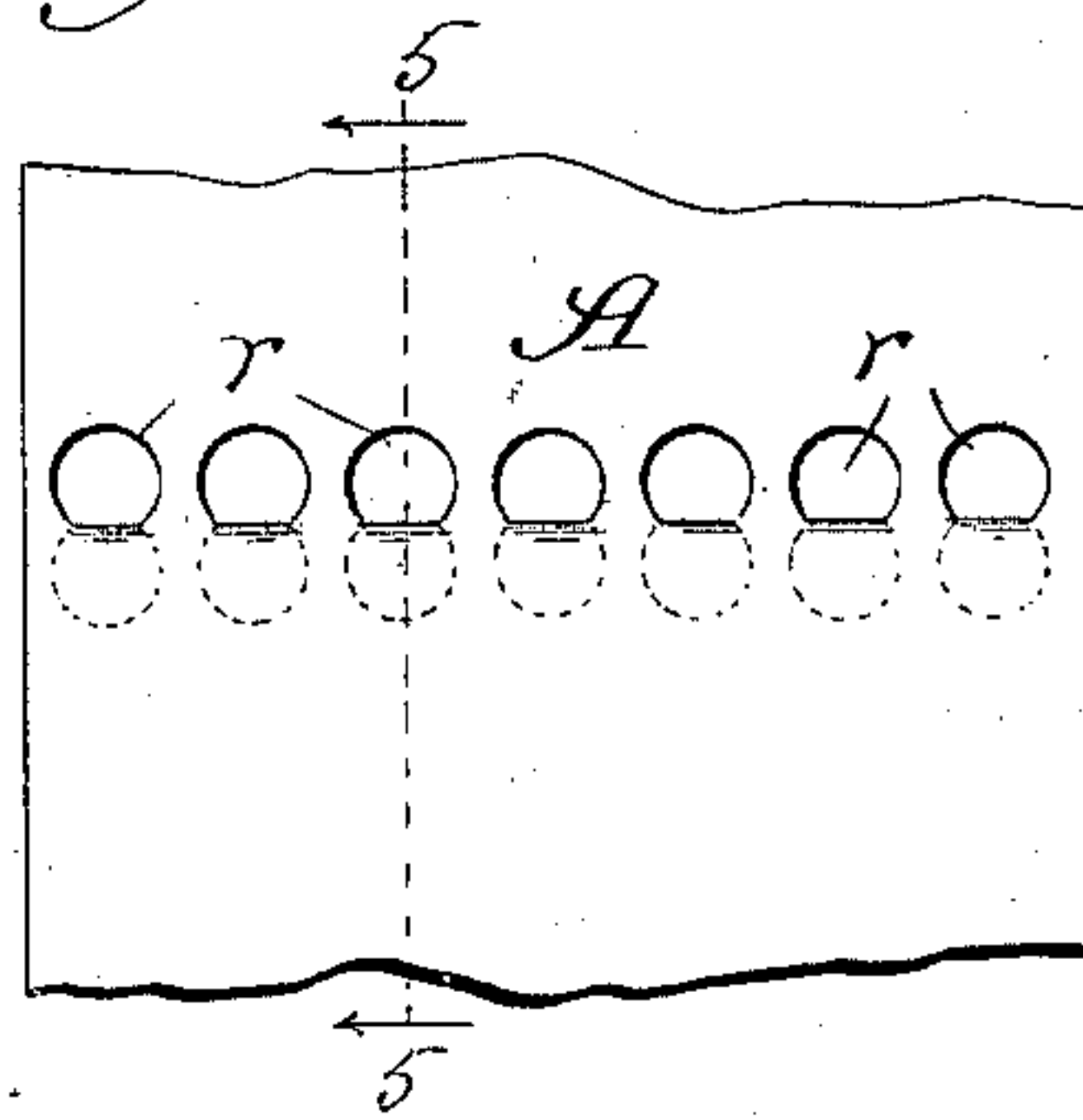


Fig. 5.

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PERFORATED PAPER.

SPECIFICATION forming part of Letters Patent No. 405,412, dated June 18, 1889.

Application filed May 17, 1888. Serial No. 274,183. (No model.)

To all whom it may concern:

Be it known that I, OLIVER H. HICKS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Perforated Paper, of which the following is a specification.

My invention relates to an improvement in the paper used for various purposes—as bank-checks, wrapping and toilet paper—and perforated to form tearing-lines. As hitherto commonly manufactured, the perforations have comprised holes produced by removing entirely from the web or sheet the material cut to leave the openings. This manner of manufacture, however, is attended with and results in serious objections, principal among which are that the numerous bits of paper—usually in the form of disks—removed by the dies or perforations in perforating tend to clog the machinery and produce litter, which is troublesome and expensive to handle, and that the dies or perforators require to be frequently sharpened, though, notwithstanding the exercise of great care to maintain the dies or perforators in proper condition, the perforations are often imperfect in the sense that the material is not removed or not entirely removed from some of them, owing to the failure of the dies or perforators to act perfectly, thereby affording an irregular and ragged and consequently unsightly product and litter in the use of the paper.

My improvement is designed to afford a product which shall not present these objections (or in which they shall at least be materially modified) either in itself or in its manufacture; and it consists in a paper web perforated to afford a tearing-line and having the material cut away to produce the perforations only partially severed.

My invention further consists in the more detailed construction of my improvement.

In the drawings, Figure 1 is a perspective of a roll of my improved perforated paper—such as may be used as a toilet-paper roll, but exaggerated in thickness as such—showing a preferred form of perforation and the end section partly torn off and reversed to illustrate the preferred manner of folding the pieces

cut to produce the perforations against the web. Fig. 2 shows in elevation a torn section of a paper web or sheet provided with the form of perforation somewhat exaggerated and affording the tearing-line shown in Fig. 1. Fig. 3 shows the same as Fig. 1, but with a different form of perforation, also exaggerated in dimensions. Fig. 4 shows the same as Fig. 3, with the pieces cut to produce the perforations folded down against the under side of the web, and Fig. 5 represents a section taken on the line 5 5 of either Fig. 1 or 3.

The immediate connection in which I intend to use my improvement is that of rolled toilet-paper, and although my invention is applicable to paper used for other purposes, as hereinbefore mentioned, for the sake of convenience I confine the following description to toilet-paper in rolls.

A is a web of toilet-paper formed into a web B and provided at intervals with lines of perforations *r*, affording tearing-lines, and produced by cutting the material away from the web only partially, to leave the attached or unsevered pieces *p* of the same outline as the perforations, which pieces may be folded against the web, as shown in Figs. 1, 4, and 5.

By way of illustration I show in the drawings two forms of perforation *r*, and piece *p* severed from the web or sheet to produce it, but do not wish thereby to be understood as limiting my improvement to any particular form thereof, though I prefer, more for the appearance than for any other reason, an angular form, and particularly the triangular form shown in Figs. 1 and 2. The pieces *p* should, by preference, be attached to or unsevered from and folded against the web toward the free end thereof, or end from which the sections defined by the perforated tearing-lines are removed, in order that they may serve to re-enforce the edges of the sections where they are to be torn off, and thus tend to prevent the strain of tearing, which of course is exerted in a downward diagonal direction, from tearing diagonally the sheet being removed.

I have invented a machine especially adapted to produce my improved article, which will form the subject of a future ap-

plication for Letters Patent; but as it forms no part of my present invention it is not described nor shown in this connection.

What I claim as new, and desire to secure by Letters Patent, is:

1. As a new article of manufacture, a sheet or web of paper perforated to form a tearing-line and having the material cut away to produce the perforations only partially severed from the sheet or web, substantially as described.

2. As a new article of manufacture, a sheet or web of paper perforated with angular perforations to form a tearing-line and having the material cut away to produce each perforation unsevered at only one edge from the sheet or web, substantially as described.

3. As a new article of manufacture, a sheet or web of paper provided with triangular perforations forming a tearing-line and having the V-shaped pieces cut away in producing perforations unsevered at their bases only from the sheet or web, substantially as described.

4. As a new article of manufacture, a sheet or web of paper perforated to form a tearing-line and having the material cut away to produce the perforations only partially severed therefrom and folded against the web or sheet, substantially as described.

5. As a new article of manufacture, a sheet or web of paper provided with triangular perforations forming a tearing-line and having V-shaped pieces cut away in producing perforations unsevered at their bases only from the sheet or web and folded against the latter, substantially as described.

6. As a new article of manufacture, a rolled web of paper perforated at intervals to form tearing-lines and having the material cut away to produce the perforations only partially severed from the web and folded against the same in the direction toward the free end of the roll, substantially as described.

OLIVER H. HICKS.

In presence of—

J. W. DYRENFORTH,
M. J. BOWERS.