

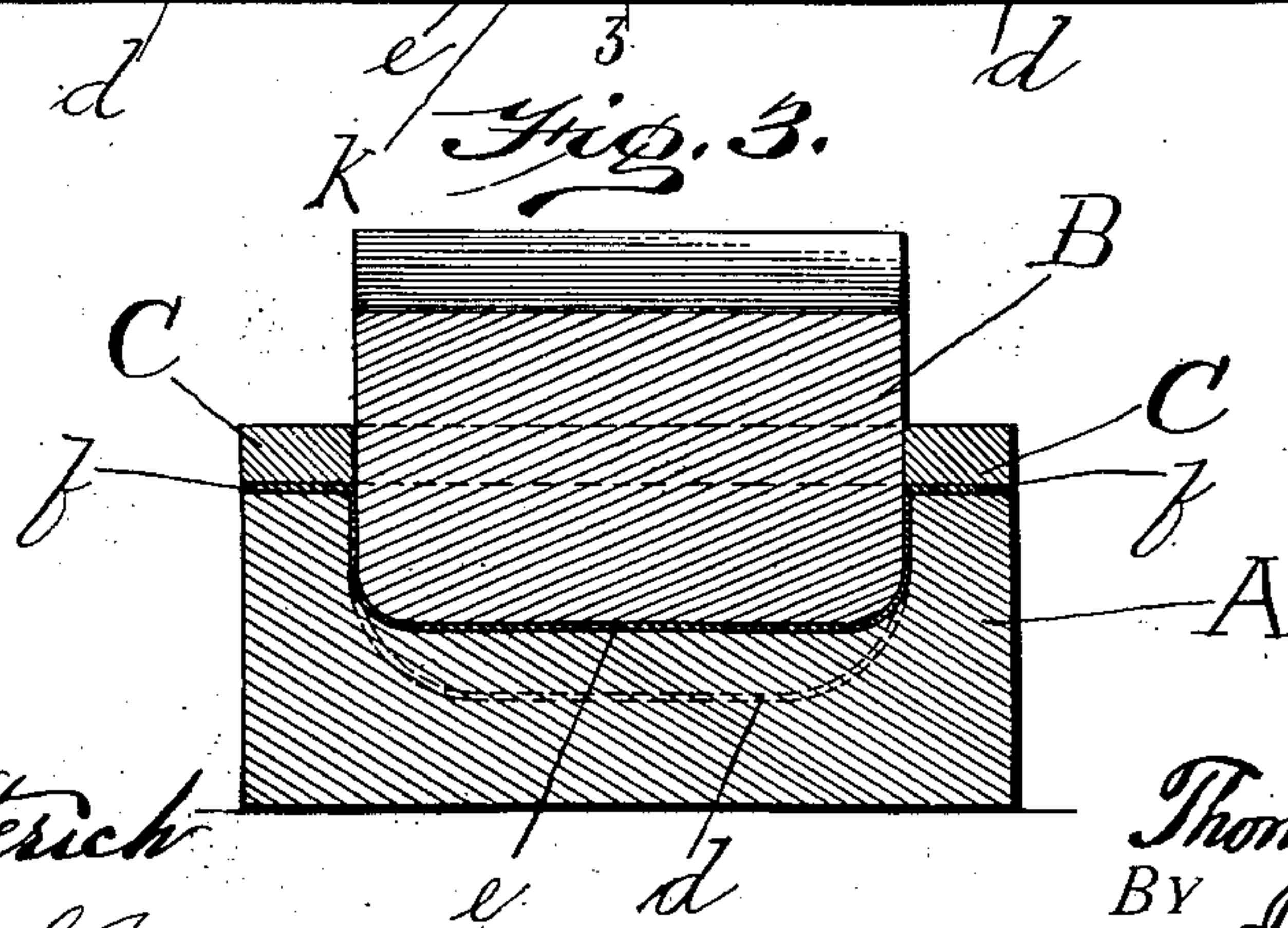
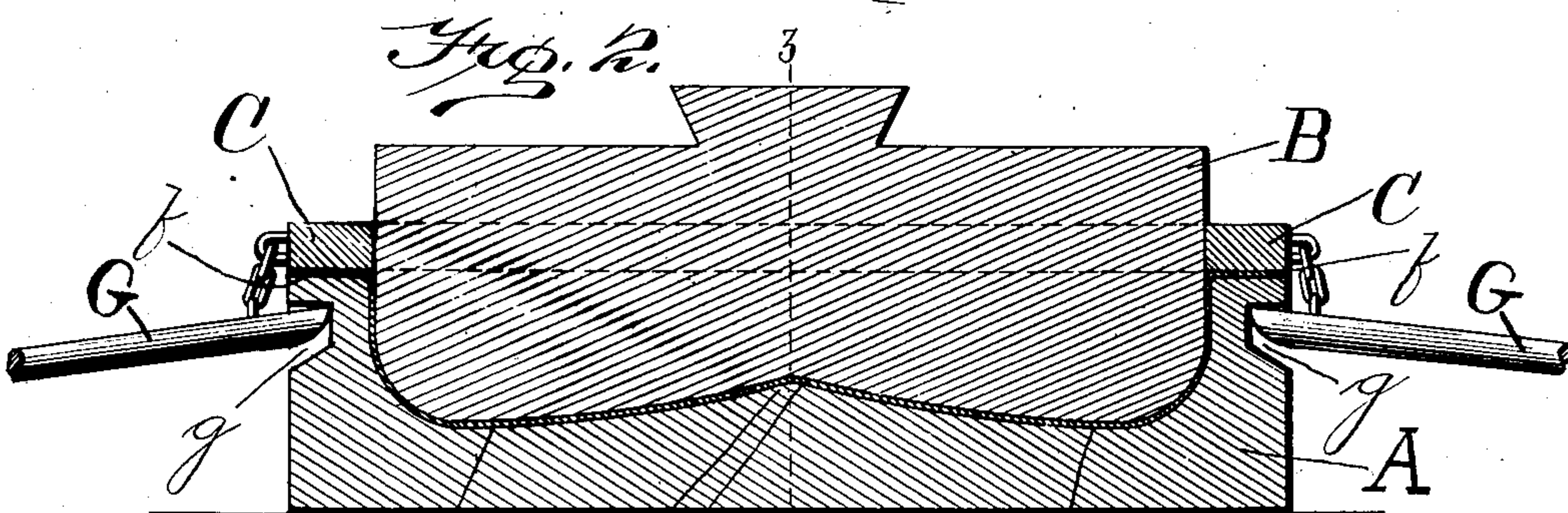
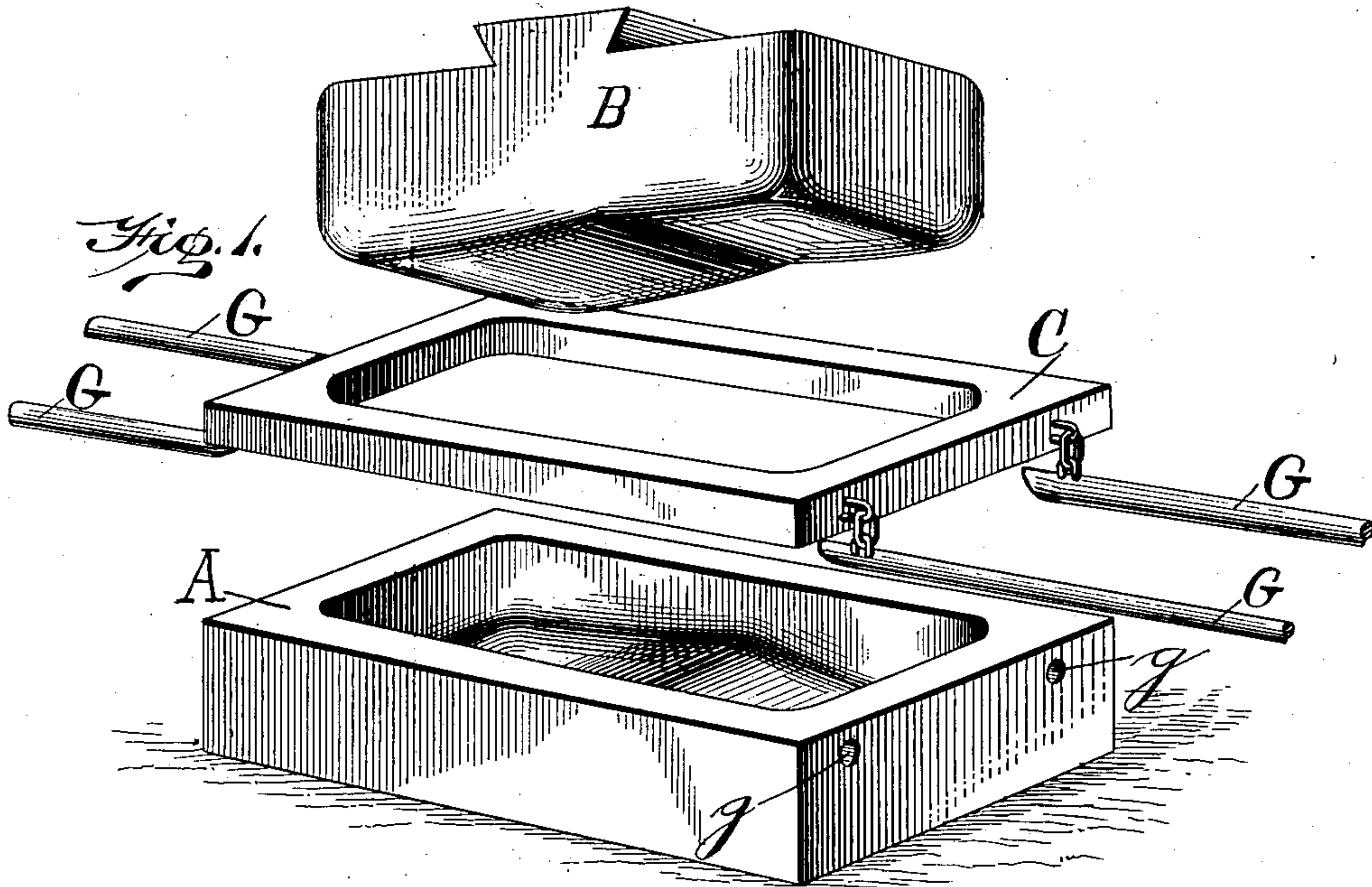
No. 814,568.

PATENTED MAR. 6, 1906.

T. H. STAGG.  
METHOD OF MAKING SCRAPER BOWLS.

APPLICATION FILED OCT. 15, 1904.

3 SHEETS—SHEET 1.



WITNESSES:

*H. G. Dieterich*  
*O. Knight Jr.*

INVENTOR

*Thomas H. Stagg.*  
BY *Knight Bros.*  
Attorneys.

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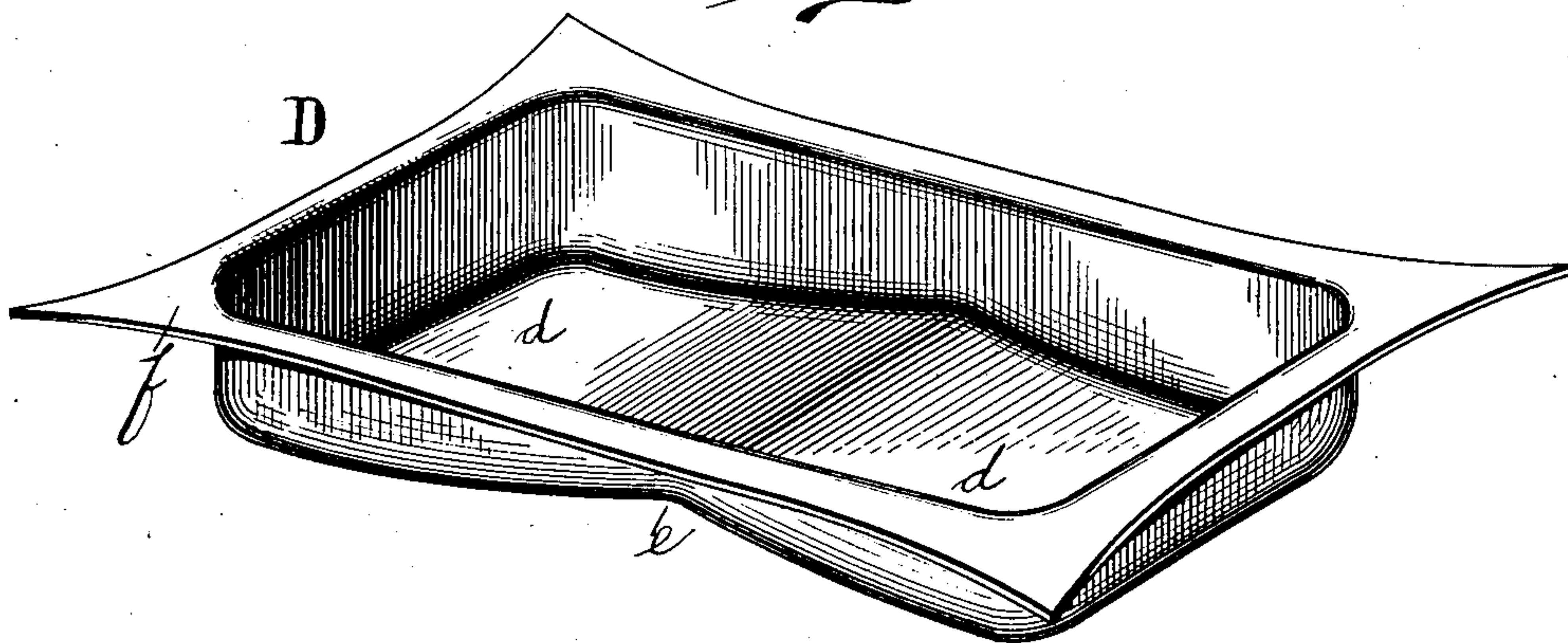
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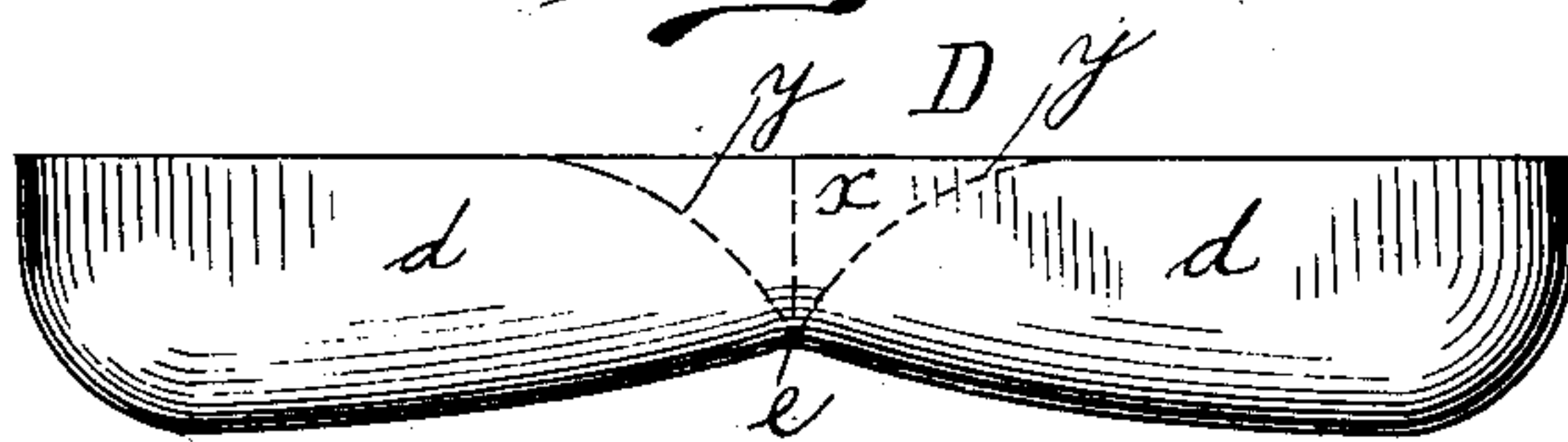
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3 SHEETS—SHEET 2.

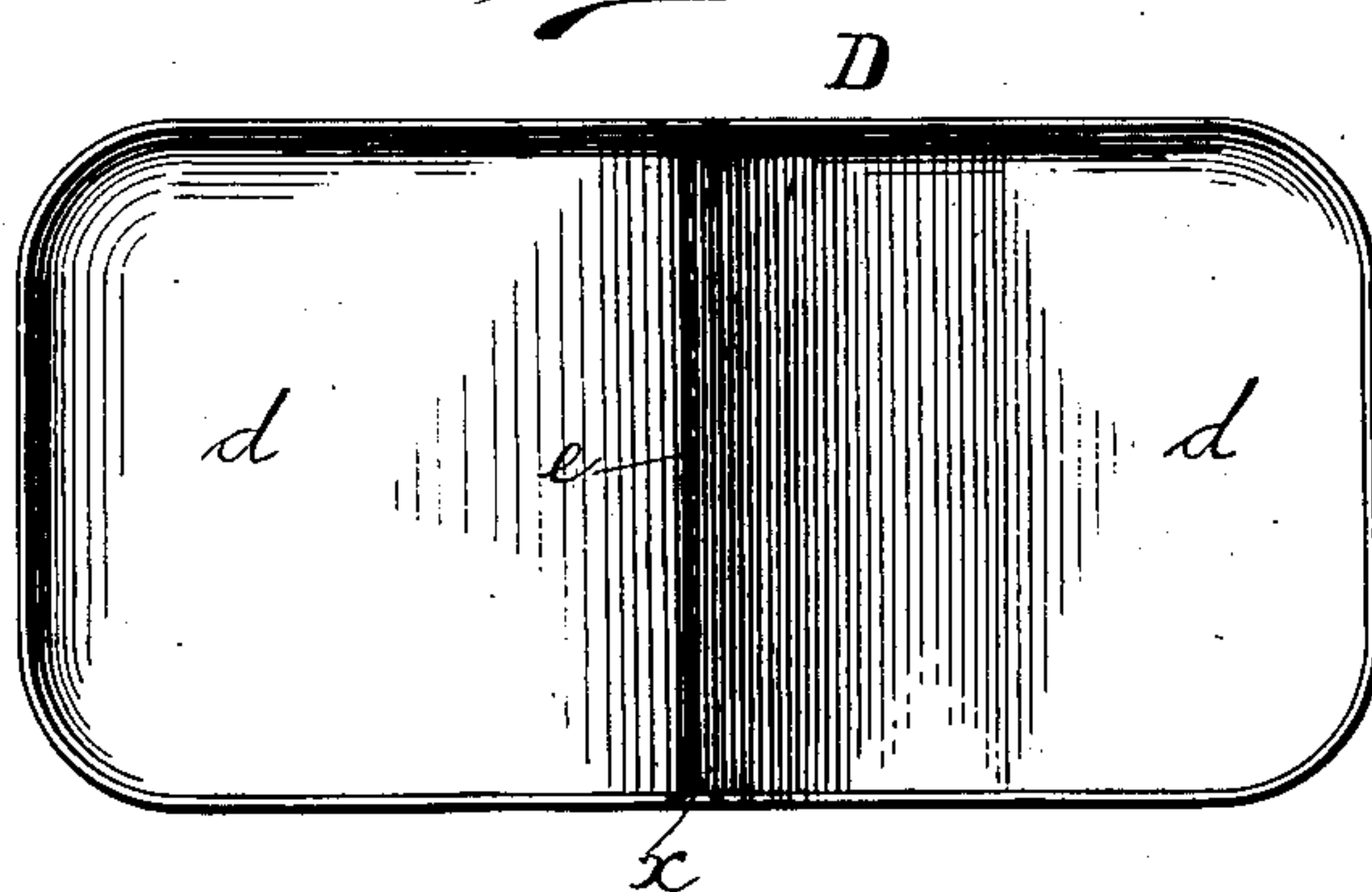
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



WITNESSES:

*H. G. Dieterich*  
*O. Knight Jr.*

INVENTOR.  
*Thomas H. Stagg*  
BY  
*Knight & Co.* Attorneys



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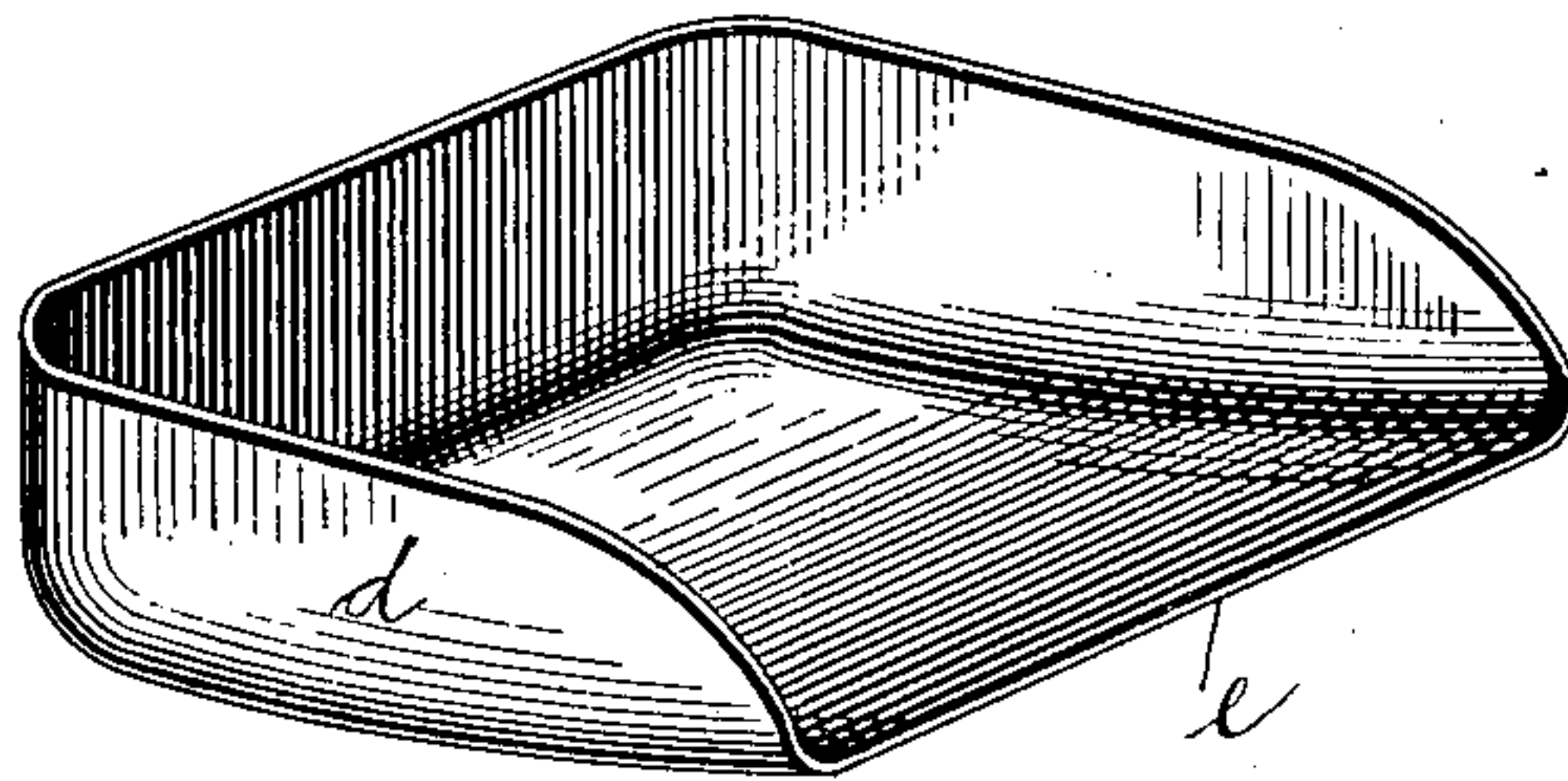
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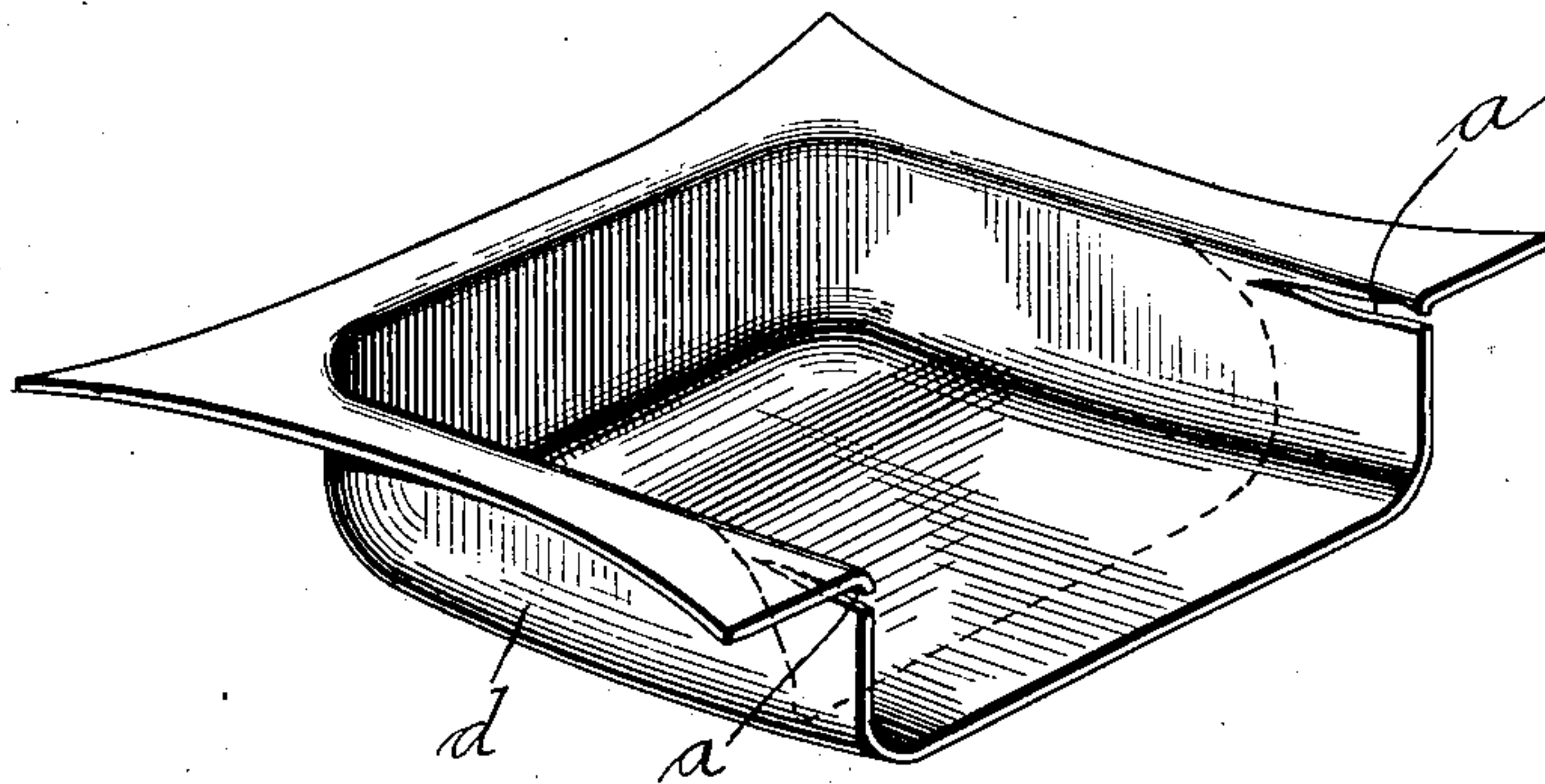
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3 SHEETS—SHEET 3.

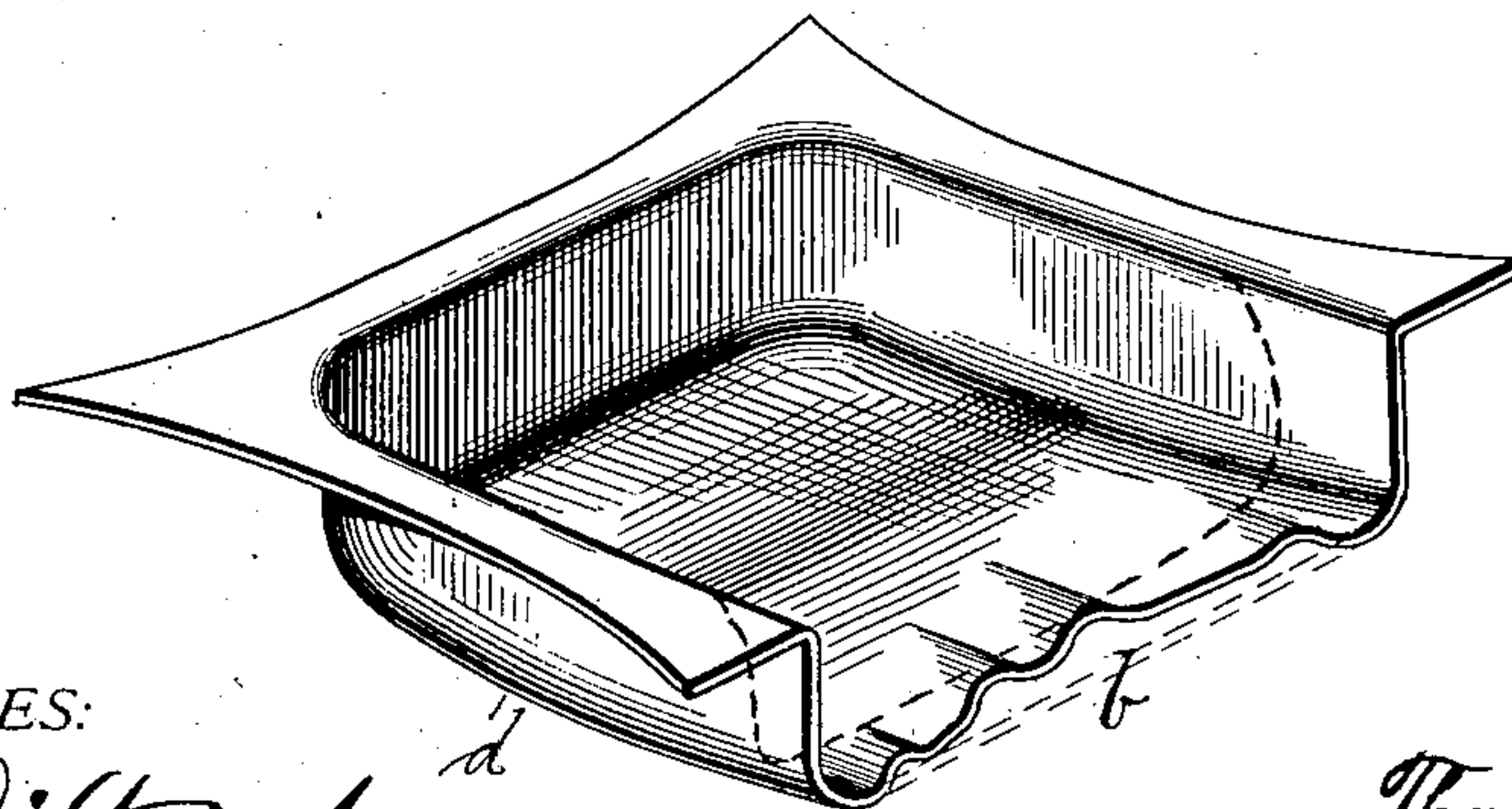
*Fig. 7.*



*Fig. 8.*



*Fig. 9.*



WITNESSES:

*H. J. Dieterich*  
*O. Knight Jr.*

INVENTOR

*Thomas H. Stagg,*  
BY *Knight Bros.*  
Attorneys.



# UNITED STATES PATENT OFFICE.

THOMAS H. STAGG, OF COLUMBUS, OHIO, ASSIGNOR TO THE KILBOURNE & JACOBS MANUFACTURING COMPANY, OF COLUMBUS, OHIO, A CORPORATION OF OHIO.

## METHOD OF MAKING SCRAPER-BOWLS.

No. 814,568.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed October 15, 1904. Serial No. 228,570.

*To all whom it may concern:*

Be it known that I, THOMAS H. STAGG, a citizen of the United States, and a resident of Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in the Manufacture of Scrapers, of which the following is a specification.

My invention relates more particularly to the production of the bowls or bodies of scrapers by stamping sheets of steel of suitable dimensions between dies.

The method heretofore practiced in the production of stamped steel scraper-bodies consists in providing an open-ended lower or hollow die conforming to the shape of the bowl to be produced, placing thereon a steel sheet of proper dimensions with one edge of the sheet across the open end of the die, placing a clamping-frame over the sheet to hold its edges, and then dropping or pressing upon the sheet the upper die to force the sheet into the lower die; but this method involves a number of disadvantages both in the method of procedure and in the article produced.

My present invention provides a method of producing scraper-bowls by which these disadvantages both in the method of production and article produced are entirely avoided and by which the economy of production is greatly increased and the wearing qualities of the article improved.

The several features of my invention will be understood upon reference to the accompanying drawings, in which—

Figure 1 is a perspective view of the upper and lower dies and the clamping-frame utilized in practicing my invention, the parts being separated to receive a sheet of steel between them. Fig. 2 is a vertical longitudinal section, on an enlarged scale, showing the same parts with the clamping-frame holding the edges of the sheet, the dies forced together, and the sheet pressed into shape. Fig. 3 is a vertical section of the same on the line 3 3, Fig. 2, being in a plane at right angles to the plane of Fig. 2. Fig. 4 is a perspective view of the blank formed by the step illustrated in Figs. 2 and 3. Figs. 5 and 6 are a side elevation and a top plan of the same with the holding flange or rim of the original sheet trimmed off. Fig. 7 is a perspective of the finished scraper-bowl. Figs. 8 and 9 are per-

spective views illustrative of two of the several objections encountered in the manufacture of scraper-bowls by the single process.

In order to get the most satisfactory results in stamping metal from sheets, the sheet should be permitted to draw some under the clamping-frame, and yet should be held sufficiently tight to cause the metal to stretch some.

In manufacturing scraper-bowls by the old method, in which the sheet was placed over an open-ended die, if, on the one hand, the clamping-frame is pressed on the rim of the sheet with any considerable force the sheet usually tears at or near the points *a* in Fig. 8, and the scraper-bowl must be trimmed on such lines as to eliminate the defect in order to obtain a marketable implement. This results in great loss of material, reduction in capacity of the bowl, ununiformity in the product of the dies, and withal a great increase in cost of manufacture. If, on the other hand, clamping pressure on the forward end of the frame is modified sufficiently to permit the metal to slip before tearing, the metal is crimped or buckled proportionally to the inclination of the sides of the die or the reduction of its width where the sides meet the bottom, the portion of the sheet which is first stretched across a wider portion of the die being subsequently crowded into a more restricted portion, and we have an imperfect front cutting edge, as indicated at *b* in Fig. 9. In both of these cases, Figs. 8 and 9, the metal draws largely from the front edge to fill in the deep heel of the scraper-bowl, and this results in an incurved front edge, which necessitates trimming back of the deepest point of the curve to produce a marketable article.

The main features of my invention, by means of which I am enabled to overcome all of the aforementioned difficulties, consist in so sustaining the metal of the sides against tearing at the points *a* that the metal may be safely stretched in stamping sufficiently to insure a smooth cutting end in each scraper-bowl and in so sustaining the metal of each scraper-bowl longitudinally that the metal for the deep heel will not be drawn from the portions constituting the fronts of the ultimate scraper-bowls, except as stretching may yield some metal toward the heel.

In carrying out my invention I employ a



pair of dies A B, Fig. 1, and a holding clamp or frame C of proper form and dimensions to produce a blank D, Figs. 4 to 6, of two scraper-bowls *d*, joined at their open forward or cutting ends *e*, the sheet from which this blank is stamped being of sufficient dimensions to leave a flange *f* surrounding the blank, by which the metal is held under the clamping-frame C. While the upper die is being forced downward, either by gravity, as in drop-forging, or by mechanical means, as when the upper die B is attached to the upper member of a power-press, clamping pressure is maintained on the rim of the sheet through the frame C by suitable means—for example, of levers G, fulcrumed in recesses *g* and suitably connected with the frame—and this pressure is so regulated that the sheet may not slip freely in yielding the metal necessary to form the vertical walls of the blank; but this yield of metal is resisted sufficiently to stretch all of the parts and insure thoroughly smooth work, not only throughout the main body of the bowl, but along that portion of the blank which is to form the open fronts and cutting edges of the bowls. There being no vertical edges in the plane on which the division of the two bowls is to take place, tearing does not occur and the metal is accordingly stretched here as in the other parts. The longitudinal pull resulting from forming the heels is balanced in the two symmetrical ends of the blank. Hence no distortion occurs.

After producing the double-bowl blank the flanges *f* may be trimmed off to produce the blank shown in Figs. 5 and 6, after which the two bowls are severed on the transverse line *x* and each half then trimmed on the curved lines *y* to produce two finished bowls like that shown in Fig. 7. To further improve the results of the process, as well as to obtain an advantageous shape in the finished article, the lower die has a middle ridge K, over which the metal is stretched and smoothed, and which gives to the finished bowl an upwardly-inclined forward end that retains the contents of the bowl when filled and while carrying to the place of dumping. This also reduces the cutting necessary to sever the bowls and trim them after separation.

The process is important for other considerations than those above mentioned. The labor employed for producing two scraper-bowls is no greater than that heretofore employed in making one. The waste of material is much less than in manufacturing by the old method, in which the amount cut away to finish the end was considerable and failures were frequent in producing blanks, and the finished product is more salable, being uniform in dimensions and having a better cutting edge. Moreover, in the new method the sheets may be worked at a wider range of temperatures than in the old method, where a certain temperature was indispen-

sable to good work. In the new method the exact temperature of the plates is of much less importance.

Having described my invention, what I claim is—

1. The herein-described improvement in the art of producing bowls or the like which consists in shaping a sheet of metal between dies constructed to form two bowls connected end to end, and during the shaping operation, stretching the metal of each bowl from the line of prospective separation of the bowls, whereby the quality of the metal at the edges produced by the separation, is improved.

2. The herein-described art of producing scraper-bowls or the like, which consists in shaping a sheet of metal between dies constructed to produce two bowls connected at their front or cutting ends, and during such shaping operation, stretching the metal of each bowl from the line of prospective separation of the bowls to improve the metal at the ultimate cutting edges and dividing the blank thus produced.

3. The process of producing scraper-bowls which consists in stamping a sheet of metal between dies constructed to form two bowls connected at their open front or cutting ends, and during such stamping operation, stretching the metal of each bowl toward its rear end from the line of connection between the bowls, and thereafter dividing the blank thus produced along such line of connection.

4. The art of producing scraper-bowls or the like which consists in stamping a sheet of metal between dies constructed to form two such articles connected at their front or cutting ends, supporting the metal at such line of connection or line of prospective separation, before completion of the stamping operation whereby the metal is stretched from said line toward the opposite ends of the bowls and thereafter dividing the blank thus formed to produce two bowl-blanks.

5. The herein-described art of producing scraper-bowls or the like which consists in stamping a sheet of suitable metal between dies constructed to produce two such articles, connected at their cutting ends, whereby the metal of each prospective bowl sustains the metal of the other bowl at said cutting edge and prospective line of separation, supporting the metal at said line of connection or prospective separation, during the latter part of the stamping operation and finally separating the blank thus formed into two bowls.

6. The herein-described improvement in the art of producing earth-scraper bowls or the like which consists in stamping a sheet of metal between dies constructed to form two bowls connected at their front or cutting ends along the line of prospective separation and with the middle raised portion corresponding in position to such line, and stretch-



ing the metal over said raised portion during the stamping operation.

7. The herein-described improvement in the art of producing earth-scraper bowls or the like, which consists in stamping a sheet of metal between dies constructed to produce two bowls connected at their open front or cutting ends, sustaining the edges of the sheet at its ends and sides during the stamping operation, with a pressure that permits the metal to draw inward but which resists such drawing sufficiently to cause stretching of the

metal in the ultimate bowls to be produced, and causing such stretching to take place from the line of connection or prospective separation and thereafter separating the blank thus produced along said line.

The foregoing specification signed this 23d day of September, 1904.

THOS. H. STAGG.

In presence of—  
W. A. MARSH,  
C. E. ROTH.