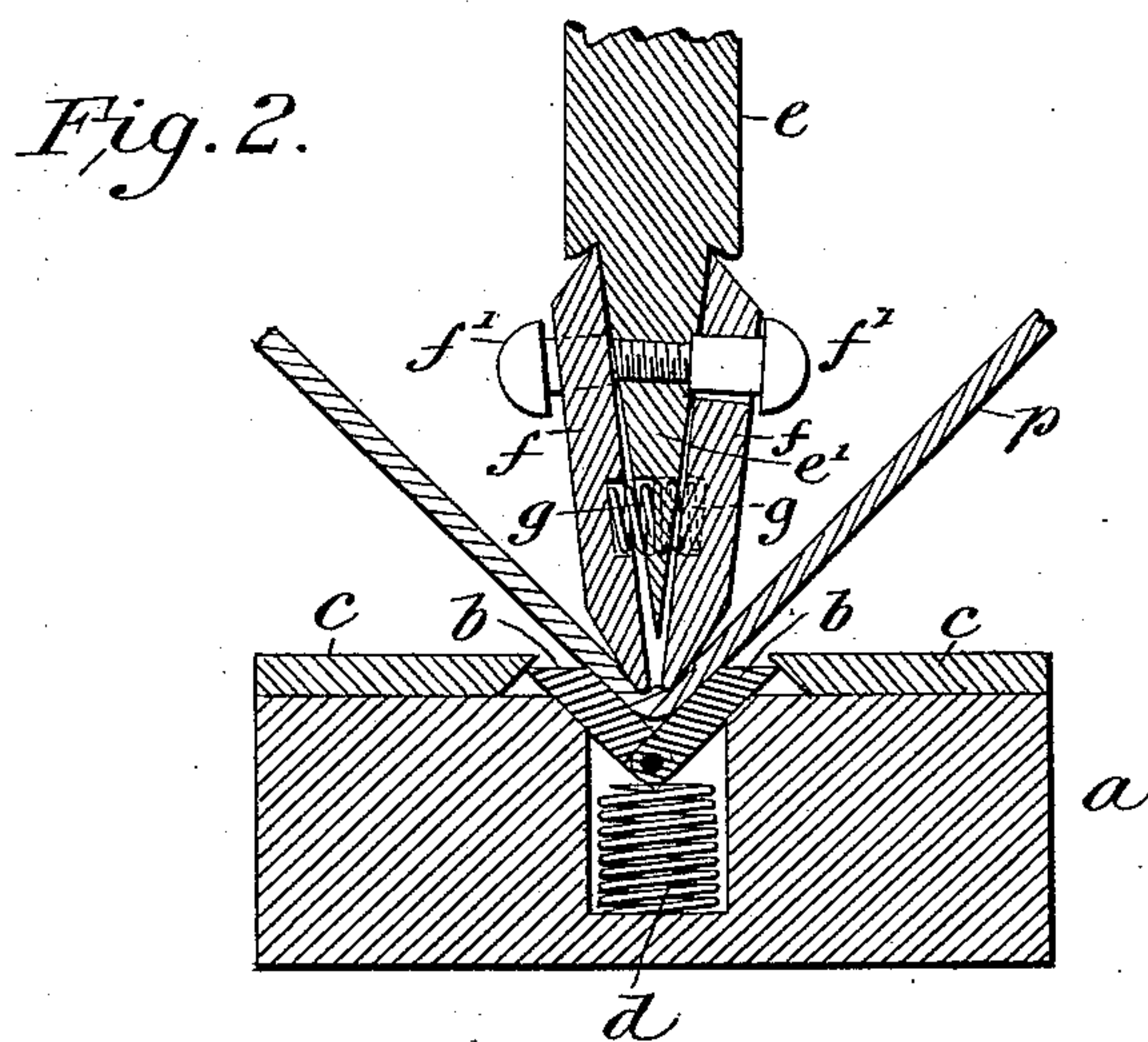
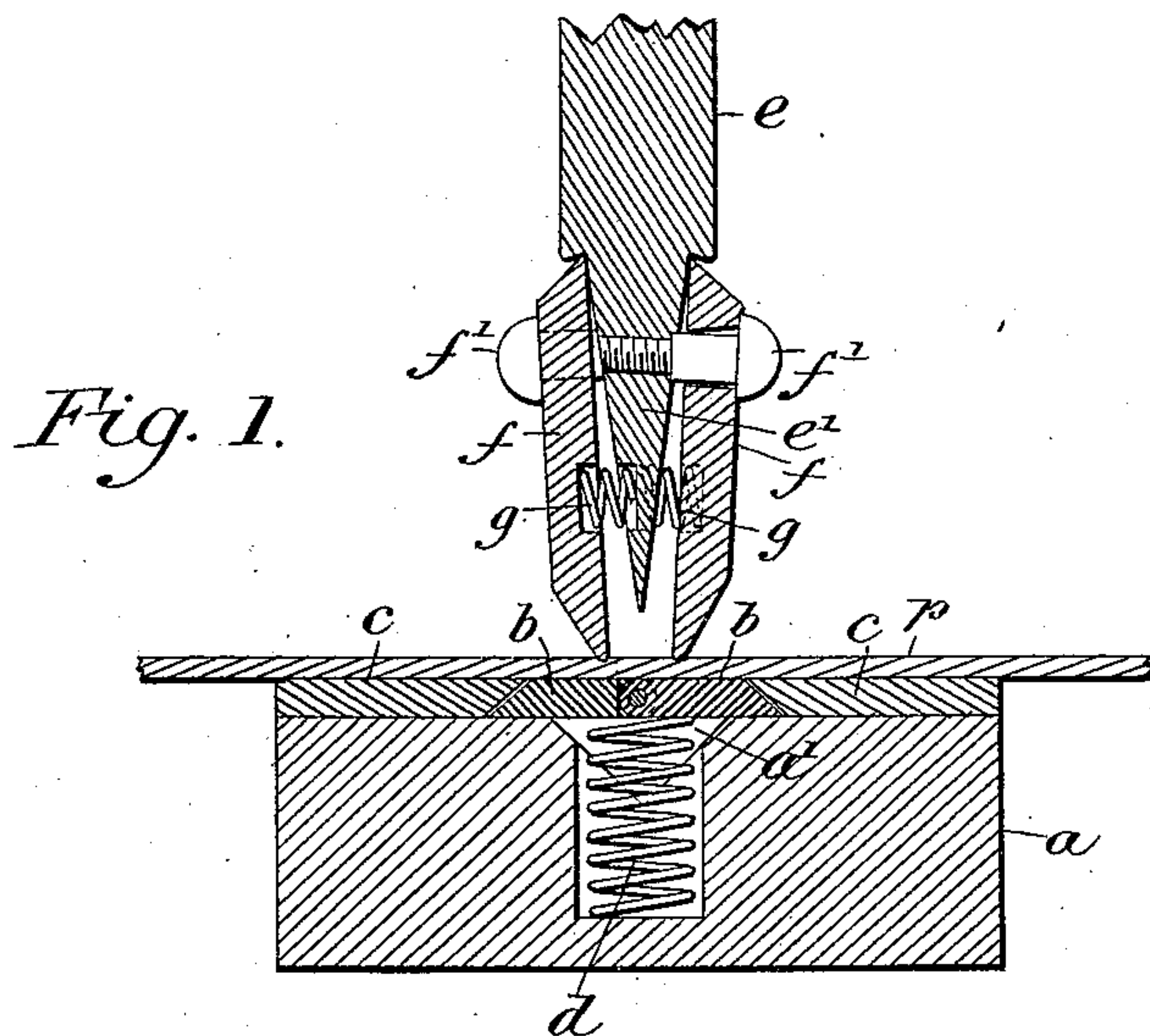


(No Model.)

T. REMUS.  
APPARATUS FOR BENDING STRAWBOARD.

No. 529,192.

Patented Nov. 13, 1894.



Witnesses:  
Jas. D. Latimer  
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# UNITED STATES PATENT OFFICE.

TEODOR REMUS, OF DRESDEN, GERMANY.

## APPARATUS FOR BENDING STRAWBOARD.

SPECIFICATION forming part of Letters Patent No. 529,192, dated November 13, 1894.

Application filed July 16, 1892. Serial No. 440,279. (No model.) Patented in Switzerland June 22, 1892, No. 5,251; in Germany June 28, 1892, No. 67,121; in France October 11, 1892, No. 222,590; in Austria-Hungary December 5, 1892, No. 33,589 and No. 65,649; in England December 23, 1892, No. 23,735, and in Belgium January 21, 1893, No. 100,247.

*To all whom it may concern:*

Be it known that I, TEODOR REMUS, a subject of the Emperor of Germany, residing at Dresden, in the Empire of Germany, and temporarily residing at Tabernacle Street, Finsbury Square, in the city of London and Kingdom of Great Britain, have invented certain Improvements in Apparatus for Bending Strawboard, Pasteboard, and the Like, of which the following is a specification.

This invention has been patented abroad as follows: In Switzerland, No. 5,251, dated June 22, 1892; in Germany, No. 67,121, dated June 28, 1892; in France, No. 222,590, dated October 11, 1892; in Austria-Hungary, No. 33,589 and No. 65,649, dated December 5, 1892; in Great Britain, No. 23,735, dated December 23, 1892, and in Belgium, No. 100,247, dated January 21, 1893.

Straw-board, pasteboard and the like, especially if of cheap quality, can not be bent to an acute angle without injury to the outside at the bend (whether breaking or cracking) unless grooved at the inside, or scored upon the outside. Both grooving and scoring weakens the board so that objects produced therefrom are less durable. The apparatus hereinafter described has for its object to obviate such diminution of strength at the bent parts. It is shown in its condition of rest and in vertical section in Figure 1 of the accompanying drawings and at the end of the operation in Fig. 2.

The apparatus is constructed as follows: *a* is a plate of such length as to suffice for the longest edges occurring in practice. A groove *a'* corresponding in section with the bend to be produced, passes along the entire plate. Above said groove two plates *b, b* hinged to one another are provided covering the groove. The axis on which the plates turn is centrally over the groove. Cheek pieces *c, c* guide the plates *b, b*. Beneath the latter are mounted springs *d* tending to keep these plates in their horizontal position. Centrally above the groove *a'*, a plunger *e* is provided. This has a pointed tongue *e'* projecting downward. At either side it is fitted with bars *f* moving inward on the screws *f'*. When at rest the bars *f* are by springs *g* forced away from tongue

*e'*. Each of the longitudinal edges of the bars *f* is made wedge shaped by having one side beveled, the lower edges being moreover rounded. The upper edges of the bars bear against shoulders on the tongue-like extension *e*.

In bending pasteboard, straw-board or the like this apparatus operates as follows: The board *p* that is to be bent is placed on the cheek pieces *c, c*, and plates *b, b* as shown in Fig. 1 and so that the intended bend coincides with the axis on which the plates *b, b* are hinged. Now when the plunger *e* descends the rounded edges of *f* will to some extent penetrate into the board by reason of the resistance of the plates *b, b*, which are, by the springs *d*, impelled to remain in a horizontal position. When the plunger *e* descends farther, the increasing pressure overcomes the resistance of the springs *d* and the plates *b, b*, turning on their hinge give way. That part of the board which is between the edges *f, f*, assumes a curvilinear form and the portions under the edges *f, f* gradually rise from a position perpendicular to *f, f*, into an inclined position. This gradual change of position produces a gradual approaching of the bars *f, f*. This operation of the parts, together with the resilience of the springs *g* and the resistance of the plates *b, b*, would cause the edges of the bars to slide down the inclined plane presented thereto by the surfaces of the board if their entering the board (though but to a slight depth) did not prevent this. As however they are compelled to move inward when the motion continues they displace the substance of board that resists them, the effect somewhat resembling what is sometimes known as "blocking," and the sharper the angle formed by the board the more that effect takes place. As the displacement of the layers of the board takes place from both sides of the board toward the bend, it finally raises part of the latter, and, as the raising on the inside takes place artificially, the neutral plane at the bend will be found near the outside and, the nearer to the outside the neutral layer is, the less does the outside require stretching. The strain being thus diminished cracking and splitting are obviated.



The outer edge of bends inside, by such apparatus, will therefore appear quite smooth.

What I claim, and desire to secure by Letters Patent of the United States, is—

- 5 1. An apparatus for bending boards, comprising in combination a bed-plate having a groove *a'*, two plates *b b* hinged together and located on the bed-plate across said groove with their pivot or hinge above said groove,  
 10 a spring *d* within said groove and below said plates, cheek pieces *c c* upon the bed-plate on either side of the plates *b b* to guide the same, a plunger *e* which moves relatively to said bed-plate to and from said groove *a'*, plates  
 15 *ff* pivotally connected to said plunger, and a spring *g* which holds the lower edges of said plates normally separated and on opposite sides of the joint between said plates *b b*, substantially as set forth.
- 20 2. In an apparatus for bending boards, the combination of a bed-plate or platen on which

is placed the material to be bent, and a bender for bending the same, said bed-plate and said bender being relatively movable, said bed plate including two plates or leaves *b b* capable  
 25 of turning at an angle to each other, and said bender having two "gathering" plates *ff* with their operative edges nearest to the plates *b b* normally separated, said plates *b b* and *ff* being so located relatively to each  
 30 other that the operative edges of the plates *ff* are on opposite sides of the joint between the plates *b b*, substantially as set forth.

In witness whereof I have hereunto set my hand.

TEODOR REMUS.

Witnesses:

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