

J. S. SPENCER.
 Frame for Optical Instruments made of Celluloid and
 other Fibrous Plastic Compositions.

No. 220,502.

Patented Oct. 14, 1879.

FIG. 1.

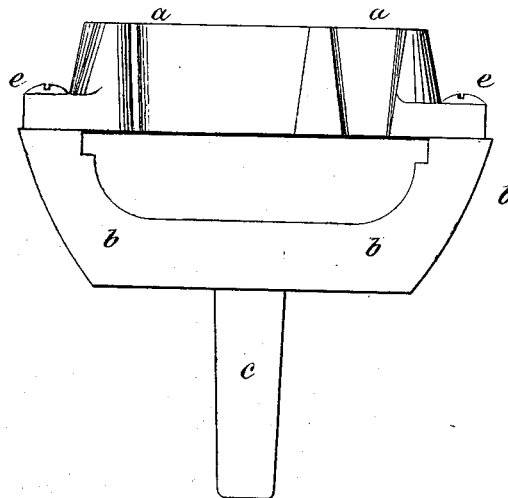


FIG. 2.

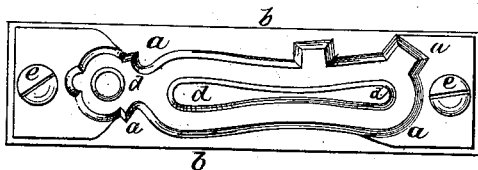


FIG. 3.

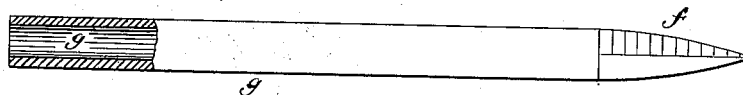


FIG. 4.

WITNESSES.

O. Keating
W. R. Denslow

INVENTOR.

John S. Spencer
by Marcus P. Weston
att'y -

UNITED STATES PATENT OFFICE.

JOHN S. SPENCER, OF NEW YORK, ASSIGNOR OF ONE-HALF OF HIS RIGHT
TO JAMES E. SPENCER, OF BROOKLYN, N. Y.

IMPROVEMENT IN FRAMES FOR OPTICAL INSTRUMENTS MADE OF CELLULOID AND OTHER FIBROUS PLASTIC COMPOSITIONS.

Specification forming part of Letters Patent No. 220,502, dated October 14, 1879; application filed
May 6, 1879.

To all whom it may concern:

Be it known that I, JOHN S. SPENCER, of the city of New York, in the State of New York, have invented a new and useful process for making optical frames or frames for optical instruments out of celluloid and other fibrous plastic compositions or material that can be made plastic, of which the following is a specification.

Figure 1 is an elevated view of the cutter or knife-edges attached to frame and handle, *a a* being the knife or outer cutter; *b b*, the frame attached to handle *c*. Fig. 2 is a view of the double knife-edges, *a a a* being the outer knife-edge, and *d d d* the inner knife, attached to the frame *b b* by means of screws *c c*. Fig. 3 is the flat rim or band, with the inner edges lying close together, but not in contact, after passing under the knife-edges. Fig. 4 is a mandrel or index-gage, upon which the material is formed after leaving the cutter, the indexes appearing at *f*. The end of the mandrel at *g* is in half-section, showing that the mandrel is hollow and heat can be introduced.

This invention relates to that class of processes employed for making optical frames and various articles out of natural elastic substances, either alone or in combination, but has not been applied to fibrous plastic material or to any material in this manner, and consists of the manipulation or working the material in a soft or plastic condition, so that optical frames can be manufactured with rapidity and accuracy, and without waste of material, as follows:

In carrying out my invention, I use celluloid or any fibrous material composed of two or more ingredients that when newly composed is plastic, or that can be brought to a plastic condition by application of a steam or alcoholic bath, hot air, or heat, in any desired form.

The operation of the invention is as follows: The material in its plastic condition is expelled from a nozzle by hydraulic pressure upon a steam-table, where it is rolled or cut into sheets of the thickness required. These sheets are carried under two double knife-edges or cutters while lying in single thick-

ness upon a table, and by rapid strokes it is so cut as to leave it in the shape of oblong rims or flat oblong bands, but with the inner edges lying very close together, but not in contact, the inner knife being also double, making a clean cut of a piece of the material, but not to waste, and not merely a slit in the material. The outer edge of these rims or bands is not circular nor of uniform shape, but is shaped by the shape of the outer knives into the requirements of the frame that it is desired to make, having lugs or extensions in one part and depressions in another; but the inner knives are so shaped as to leave the rim of a uniform width. These rims or bands when so cut are rapidly stretched over a mandrel or index-gage by inserting the pointed end of the mandrel into the hole or orifice made in the material by the inner knives and then forcing them up the mandrel to the point on the index indicating the size of orifice required, the outer edges retaining the same general shape given them by the knife where they are left to season and solidify, in doing which they adhere so firmly to the mandrel that they can only be removed by heat introduced into the mandrel, which is made hollow for that purpose.

The mandrel must be so made that its outer surface is the required shape of the inner edge of the frame that you are making. By making a clean cut with the inner knife the material takes on the contour of the mandrel with equal readiness in all its parts, whereas if only a slit was made for the introduction of the mandrel the material would break at each end of the slit, causing imperfections in the frame.

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

1. The process for making optical frames or frames for optical instruments from fibrous plastic composition or composite material that can be made plastic, which consists in cutting the frames from the material when in sheets and forming them upon a mandrel, substantially as set forth.

2. The process of setting or arranging two double cutters or knife-edges so that the outer

ones will cut the material in the form required for the outer part of the frame and the inner knives will make a clean cut of the material, but not to waste, and in such a manner as to leave a uniform width of rim.

3. The process of forming any kind of optical frames rapidly by forcing these flat bands upon a mandrel indexed and conforming them to the contour of the mandrel without changing the outer form of the frame, substantially as specified.

4. The process of producing frames suited to any shaped lens or optical instruments from plastic material by conforming the material

while in sheets to the contour of the mandrel, and removing them without injury by introduction of heat into the mandrel, substantially as set forth.

In testimony that I claim the foregoing improvement in process of producing optical frames and frames for optical instruments from plastic composition, as above described, I have hereunto set my hand this 5th day of July, 1879.

JOHN S. SPENCER.

Witnesses:

JOS. J. BROPHY,

WILLIAM J. MANN.