(Model.)

G. F. SCHILD.

AMPLIFIER.

No. 300,804. Patented June 24, 1884.

Fig 1

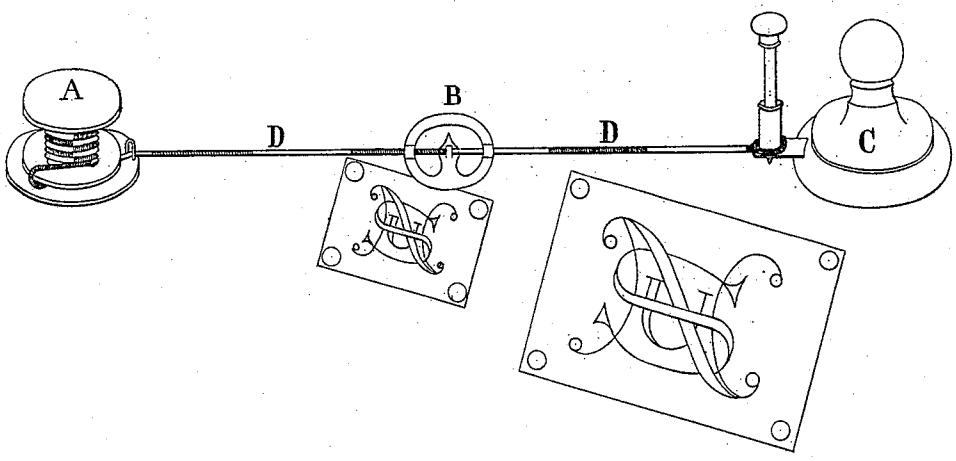


Fig 2

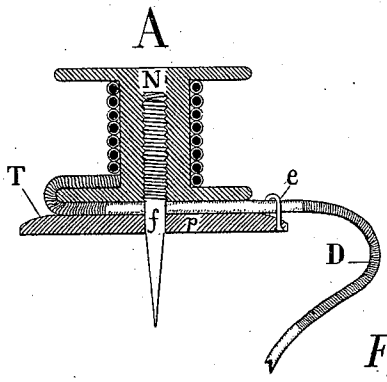


Fig 4

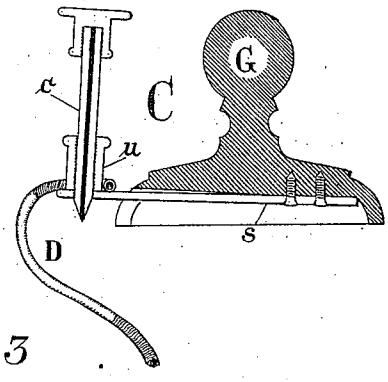
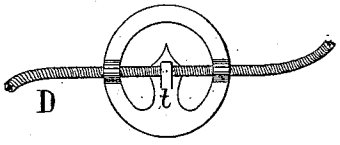


Fig 3



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UNITED STATES PATENT OFFICE.

GEORGE F. SCHILD, OF VALLEJO, CALIFORNIA.

AMPLIFIER.

SPECIFICATION forming part of Letters Patent No. 300,804, dated June 24, 1884.

Application filed February 20, 1884. (Model.)

To all whom it may concern:

Be it known that I, GEORGE F. SCHILD, a citizen of the United States, residing at Vallejo, in the county of Solano and the State of California, have invented a new and useful Mathematical Instrument I propose to call "Amplifier," of which the following is a specification.

My invention relates to a mathematical instrument for copying drawings to a larger scale. Ordinarily a mathematical instrument named "pantograph" is used for this purpose—a complicated, bulky, and costly instrument.

The objects of my invention are to provide a simple, small, and cheap instrument. I attain these objects by the instrument illustrated in the accompanying drawings, in which—

Figure 1 gives a perspective view of the entire instrument; Fig. 2, a vertical section through the pivot A; Fig. 3, the plan of the pointer B; Fig. 4, a vertical section through the pencil-holder C.

Similar letters refer to similar parts throughout the several views.

Fig. 1 shows the instrument in place, ready for working. Pivot A is stationary, and to it is fastened an elastic string, D, graduated into a series of equal divisions. Attached to this string is the movable pointer B, resting above the monogram to be copied. At the other end of the string the pencil-holder C is fastened, resting above the completed enlarged copy.

Fig. 2 is a vertical section of the pivot A. It consists of the tack T and the nut N. The tack T consists of the plate *p*, at the rim of which is fastened the eye *e*. Through the center of the plate *p* passes the pin *f*, sharpened at the lower end, and forming a screw at the other end. To this screw fits the nut N, shaped like a spool or reel, around which the elastic string D is wound. The string D passes between a washer (not shown on the plan) under the nut N and the plate *p* through the eye *e*. By screwing the nut N down it clamps and holds the elastic string stationary.

In Fig. 3 I show the pointer B, consisting of a thin round plate, cut out in such a manner as to leave a sharp point at the center, and bend in such a shape that the elastic string passes freely underneath and through it. By pressing the tongue *t* down the pointer becomes stationary on the string.

The pencil-holder C (shown in Fig. 4) consists of the knob G, to the under side of which is fastened the spring *s*, that supports the threaded tube *u*, through which the pencil passes, and around which the other end of the elastic string D is fastened.

The method of using the instrument is as follows: The pivot A is pressed into the table or drawing-board, the elastic string D unwound and clamped fast, when it is found that it will stretch over the entire table or board. If the drawing is to be copied, say, to double its scale, the pointer B is fastened exactly mid-length of the string D by counting off the same number of divisions on both sides of the pointer. The original drawing is then put under the pointer and fastened by tacks, when it is found that by stretching the string the pointer B will pass over every part of the drawing. Then a larger paper is fastened under the pencil-holder C in a similar manner. The pencil-holder is taken then in the right hand, and the pencil pressed down slightly by the index-finger while the pointer B is passing delicately and steadily over every line of the original, by stretching more or less the elastic string D. While the pointer passes over from one part of the original to another, the pressure on the pencil is relieved, the pencil is raised from the paper by the spring *s*, and no false pencil-lines appear on the copy. By shifting the pointer B on the string D toward the pivot A and fastening, say, at one-fourth of its length, the original will be copied at a quadruple scale of the original, or sixteen times as large. By fastening the pointer one-fourth of the length of the string toward the pencil-holder, the copy will be made only one and one half time the scale of the original.

To facilitate the finding of the exact position of the pointer, the elastic string D is graduated by a series of black and white stripes, each one inch long.

The copy can be enlarged by this instrument to any scale or any size required, and by a little practice any person will be able to use it.

Having fully described the mathematical instrument for copying drawings, paintings, patterns, &c., on a larger scale, and which I

propose to call "amplifier," (in distinction of the pantograph, which copies drawings also on a smaller scale,) what I do claim as my invention, and desire to secure by Letters Patent, is—

The combination of the four principal parts composing the instrument—namely, the tack or pivot A, the pointer B, the pencil-holder C, and the elastic graduated string D—substantially as set forth.

In witness whereof I hereunto set my hand.

GEORGE F. SCHILD.

Witnesses:
E. A. WILLATS,
F. R. SIMONTON.