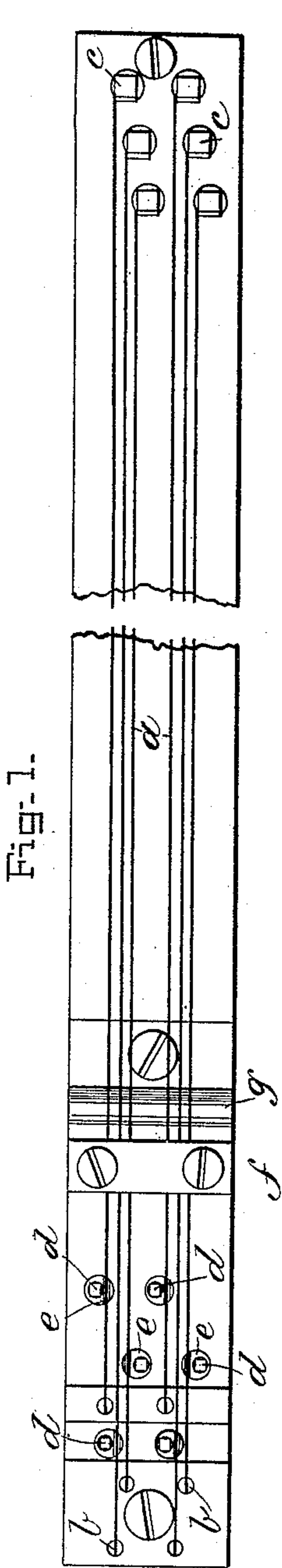


(No Model.)

A. FELL DIN.
PIANO TUNING APPARATUS.

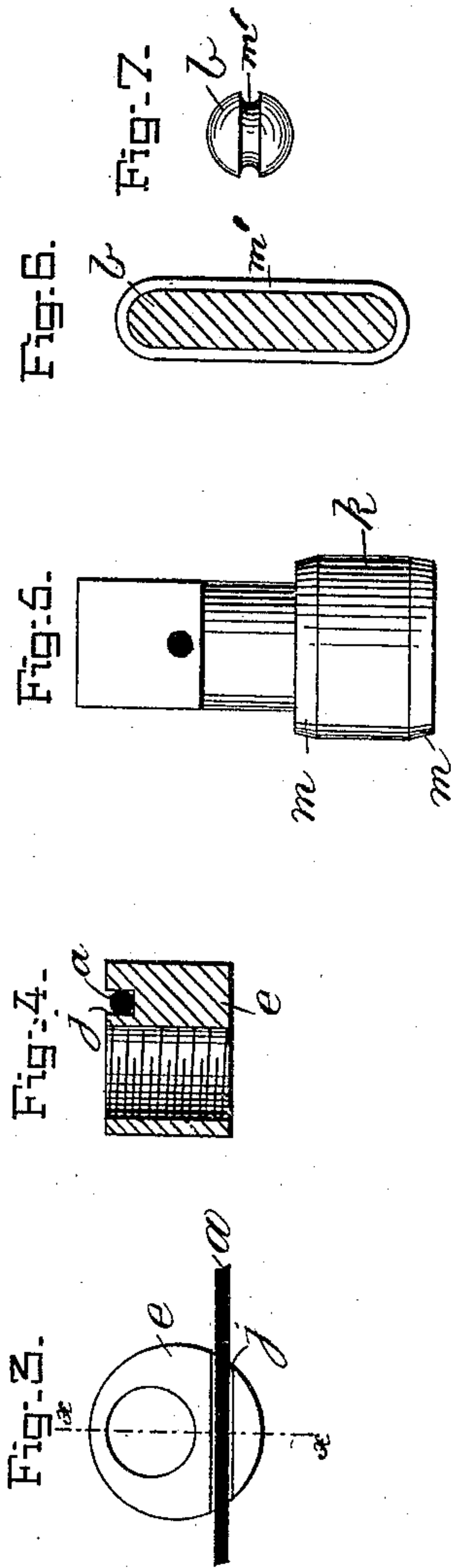
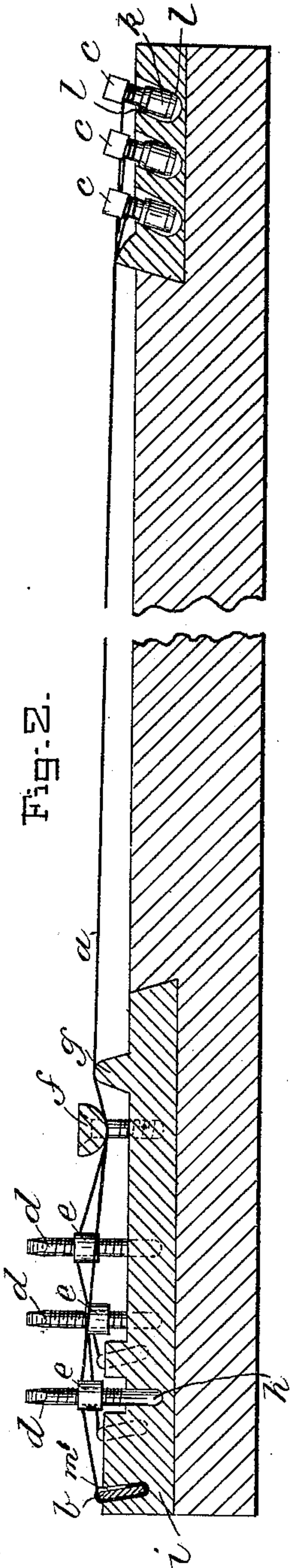
No. 443,041.

Patented Dec. 16, 1890.



WITNESSES.

W. J. Morgan
Ernst Lundgren



INVENTOR.

Abraham Fell Din
By A. O. Thayer
attor.

UNITED STATES PATENT OFFICE.

ABRAHAM FELLIDIN, OF AUBURN, NEW YORK.

PIANO-TUNING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 443,041, dated December 16, 1890.

Application filed March 28, 1890. Serial No. 345,769. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM FELLIDIN, a citizen of the United States, and a resident of Auburn, in the county of Cayuga and State of New York, have invented new and useful Improvements in Piano-Tuning Apparatus, of which the following is a specification.

My invention consists of an improved adjusting device auxiliary to the ordinary or primary tuning-pins, whereby it is designed to provide for finer, easier, and more reliable and permanent adjustment; and it also consists of an improved construction of hitch-pins, all as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is a plan view of a section of a stretching-frame and some strings adjusted with my improved apparatus. Fig. 2 is a longitudinal sectional elevation of the same. Fig. 3 is a plan view of part of the auxiliary adjusting apparatus. Fig. 4 is a section of Fig. 3 on line $x x$. Fig. 5 is a side elevation of the primary tuning-pin which I prefer to use, on an enlarged scale. Fig. 6 is a sectional elevation, and Fig. 7 is a top view, of my improved hitch-pin used to secure the strings at one end.

The strings a are fastened at one end by the hitch-pins b and at the other end by the tuning-pins c , which latter may be of any approved form; but I prefer to use pins of the form represented, and which are the subject of another application for a patent filed by me, and are not claimed herein. They are used for stretching the strings taut; but for the finer adjustments I provide the adjusting-screws d and collars e , between the hitch-pins b , and the tension-bar f , near the agraffe g , said pins being set in the smooth-bored holes h in the base-plate i , so that they may be turned freely therein, and the collars are screwed on the pins and have a groove j across the upper side and along one side of the hole for the screw in which the string rides, so as to be raised and lowered by the collar and to prevent the collar from turning by the screw, which, being turned by a key-wrench applied to the upper end, causes the collar to rise or fall, according as the screw is turned one way or the other, and thus adjusts the tension with great delicacy and precision and with but slight effort, as the screws are subject to but

slight friction as compared with the friction of the primary tuning-pins.

The tuning-pins c herein represented have a plain lower section k inserted in a plain hole of somewhat larger diameter in the base-plate, and are ground to bearings at l in said holes by turning it with a brace-wrench while subject to stress in the direction of the pull of the strings, so as to bevel the corners m of the said lower section of the pin and produce the said bearings at l , consisting of correspondingly-slight grooves in the walls of the hole, which effectually prevent the escape of the pins from the holes and add materially to the friction, holding the pins from being pulled slack by the tension of the strings.

My improvement in hitch-pins consists in the said pins made about as long or slightly longer than the depth of the holes for them in the base-plate and being grooved lengthwise and across the ends nearly but not quite as deep as the diameter of the wire, as shown at m' , with which pins the wire is secured by placing it across the upper end and lapping it down around the lower end and up the other side to some extent and then inserting the pins in the holes, making a simpler and neater fastening, and so that the pull of the wire is central to the pins, whereby the pins are much less liable to shift under the stress of the strings.

I claim—

1. The combination, with the strings and the primary tuning-pins, of the auxiliary tuning device consisting of the pins fitted loosely in the plain holes of the base, the adjusting-collars screwed on the pins and having the groove in the upper side, and the tension-bar intermediate to said adjusting-pins and the agraffe, substantially as described.

2. The improved hitch-pin for pianos and other stringed instruments, having the groove along the sides and across the ends and adapted to receive the wire, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 13th day of March, 1890.

ABRAHAM FELLIDIN.

Witnesses:

A. C. ELLISON,
J. ROSECRANS.