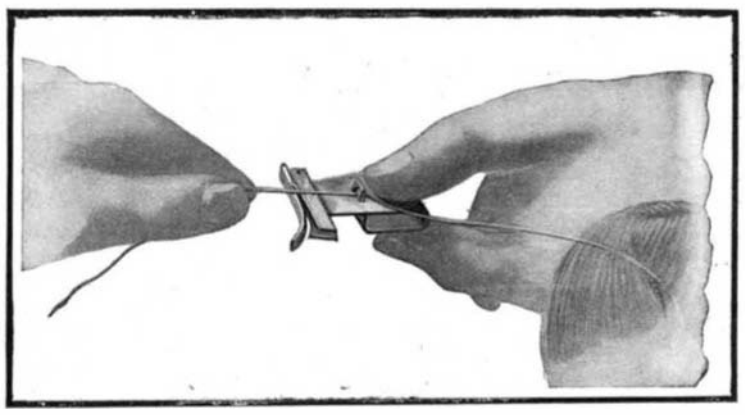
Patent Department

AN IMPROVED TWINE CUTTER.

A recent patent describes a very simple device which is adapted to be carried at the free end of a ball of twine and may be used for cutting the twine when it is desired to sever a length from the ball. The device is provided with a simple clamp by which it is held fast to the twine, thus preventing accidental separation therefrom. However, the clamp may be easily operated to release the twine when it is desired



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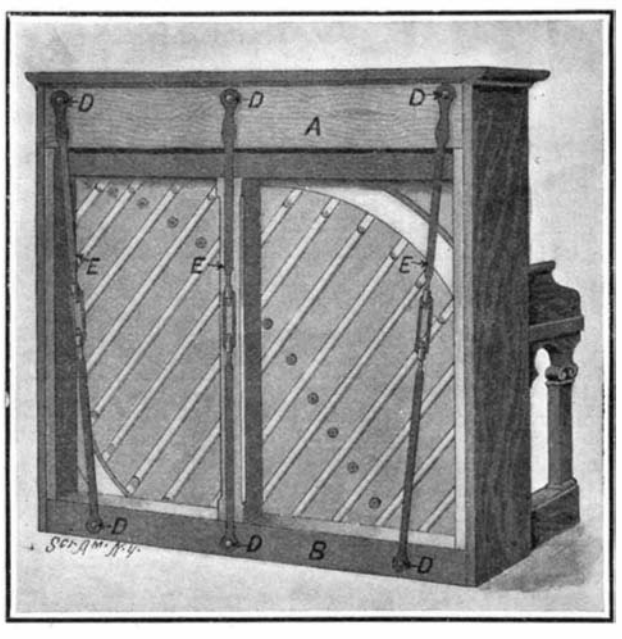
to pass a fresh length therethrough or remove it entirely from the ball. The accompanying engraving illustrates the twine cutter. It consists of a sheet-metal body of T-shape. The forward edge of the T-head is bent downward and is partly cut free of the rest of the head. The free end is bent outwardly and forms a guard for a knife blade, which is secured to the under side of the T-head. A pair of tabs projecting from the rear of the T-head are bent under and against the knife blade, to hold it in place. At the opposite end the sheet metal body is reversely bent upon itself to form a spring finger-piece, the extremity of which is reduced in width and passes upward through a slot in the main body. This extremity is bent upon itself and is formed with an aperture through which the twine is passed and which is normally drawn by the spring finger-piece below the upper surface of the body, thus pinching the twine and clamping it fast. In use when it is desired to sever a length of twine the spring finger piece is pressed to release the twine, and the latter is drawn through the aperture until the required length extends beyond the knife blade. The spring finger-piece is then released to again clamp the twine, after which the twine is cut by drawing it between the guard and the knife blade. The inventors of this novel twine cutter are Messrs. G. R. Patterson and W. E. Moen, of 3918 South 16th Street, Red Jacket, Mich.

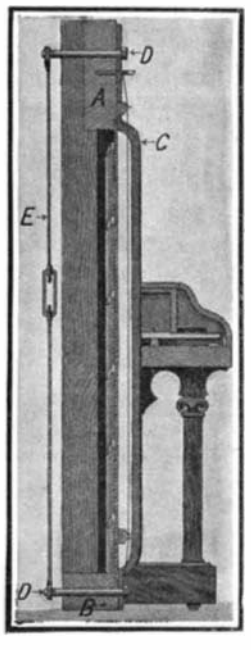
ADJUSTABLE TENSION RODS FOR PIANOS.

To the compositions of Beethoven we owe the first improvements which raised the piano from its humble position as a modified clavichord to the present highly-developed instrument. In order to keep up with the pace set by the great composer, manufacturers found it necessary to increase the compass and the power of the piano. The sounding board was improved, the range was lengthened, heavier wires were used, and more strings per note. But here a difficulty was encountered. The combined tension of the piano strings was so enormous, that the frame could not bear up under the strain. Various devices were employed to remedy this defect, and eventually, in 1825, a cast-iron frame was for the first time used to support the wooden frame and prevent it from crushing.

This practice is still in vogue. The wrest pins are not supported directly by the iron frame, but are driven into the wooden frame through openings in the iron plate. Hence the tension of the strings is still imposed directly upon the wooden wrest plank and bottom plank, while the cast-iron frame acts merely as a support for these planks. However, this support is only at one side of the planks, and consequently serves merely as a fulcrum for the wrest pins, which, with their outer ends under the enormous tension of the piano strings, exert a lifting force on the unsupported part of the wrest plank. In most pianos made to-day the wooden frame is braced by a series of posts glued to the wrest and bottom planks, composed of end wood pieces; but this is inadequate, as a moment's consideration will show, for the effect of the string tension at the front of the cast-iron frame is to exert a tension between the planks at the other side of the iron frame. Obviously, wooden posts, which are best adapted to resist compression, will not suffice to counteract this tension. What is needed then is a series of tension members, and this is provided by the recent invention of Mr. T. J. Howard, of Toronto, Canada, who has assigned his patent rights to the Newcombe Piano Company, Limited, of the same city. The accompanying engraving illustrates the Newcombe construction. The wrest plank shown at *A* and the bottom plank at *B* are supported by upright posts at each end, and also by a center post mortised into the top and bottom planks; in itself an improvement on the old method of gluing end wood pieces. The cast-iron plate indicated at *C* acts in the usual manner to brace the wooden frame against the tension of the strings, whose lower ends are looped over studs on the iron plate, and whose upper ends are secured to pins driven into the wrest plank. The cast-iron plate is secured to the wooden frame by means of tie bolts *D*, which pass through the bottom and wrest planks. To the rear ends of the tie bolts the tension members *E* are secured. These consist of steel straps arranged in pairs of opposite members, respectively connected to the top and bottom tie bolts. The adjacent ends of each pair are threaded and connected by means of a turnbuckle. The turnbuckle may be adjusted to exert sufficient tension on the top and bottom planks, to counteract the tension of the strings.

Owing to the short leverage on which the piano strings exert their tension, it may at first seem as if the use of tension rods were an unnecessary precaution. But this is far from being the case, as experience has shown. For example, the total pull of the bass strings on a standard Newcombe piano is 7,980 pounds, while the treble strings exert a tension of 30,246 pounds. The combined pull resolved in the vertical direction amounts to 37,080 pounds, or 18½ tons. It has been calculated that with a piano back 7 inches deep, the leverage is sufficient to produce a strain of 3,075 pounds on the tension rods, and by using three tension rods of ⅜-inch diameter, this strain is satisfactorily withstood, or by using heavier tension rods, the depth of the piano back can be safely reduced. In the new construction the usual heavy posts at the back of the piano are dispensed with, giving a more open and efficient soundboard. As the wooden frame is kept in shape by the tension rods, the soundboard will also retain its crown or convex form, thus preserving the tone of the piano. It will be noted that the invention is not a radical breaking away from recognized principles of piano building, but an extension of a principle already used in many ways, where extra strength or resistance is needed.



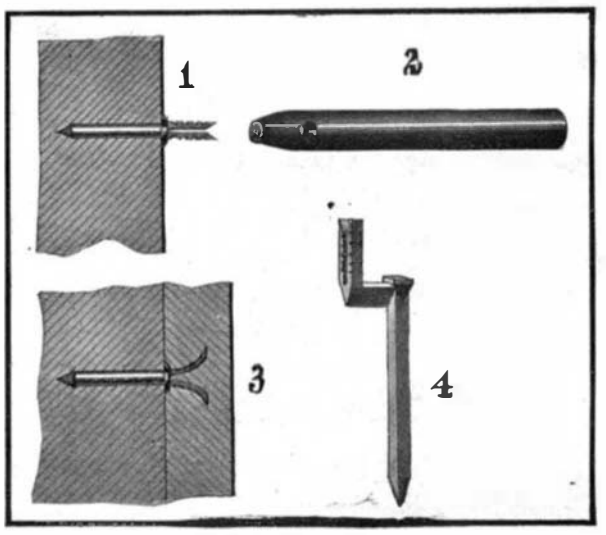


ADJUSTABLE TENSION RODS FOR PIANOS.

Polishing Paste. — Melt together 2 parts of paraffine and 6 parts of lubricating oil; then mingle with 8 parts of infusorial earth 1 part of oleic acid and a few drops of oil of mirbane are to be added.

A NOVEL FORM OF NAIL.

A novel type of nail has recently been invented by Mr. Charles A. Birdsall, of Holden, Mo., for use with all kinds of woodwork where a smooth finish is desired. The body of the nail is of the usual form, but the head is provided with a pair of prongs which are adapted to be driven into a piece of wood to bind it to the timber in which the main body is imbedded. The form of the nail is clearly illustrated in Fig. 1, which shows the body of the nail driven into a timber. In order to drive the nail home without bending or injuring the prongs that project from the head, a special tool is employed, which is illustrated in Fig. 2.



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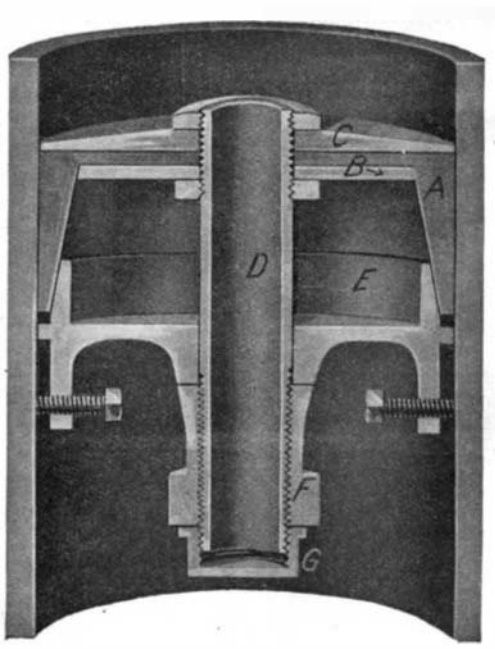
This consists of a punch formed with a recess in one end adapted to receive the prongs. This recess is centrally divided by a cross-plate which is adapted to fit between the prongs. A transverse aperture in the punch communicates with this recess, enabling the latter to be kept clean and also serving to indicate to the workman when the prongs are set in the right position for the grain of the wood which is to be engaged by them. After the body of the nail has been driven home with the aid of the punch, the second piece of timber is applied to the head of the nail and hammered into contact with the first piece. The prongs are thus forced into the second piece and, due to the fact that they are outwardly beveled at the ends, they spread apart to the position shown in Fig. 3. The two pieces are thus securely clenched together and the prongs, being scored on their outer faces, positively prevent the separation of the parts. Fig. 4 illustrates a modified form of nail, in which the prongs extend from an offset, thus permitting the body of the nail to be driven into the timber without the use of a special tool to hold the prongs.

PIPE STOPPER OR TEST PLUG.

The accompanying engraving illustrates a device for temporarily stopping or closing soil pipes and the like, to permit of testing them. The plug is so designed as to insure an absolutely tight closure, and yet permit it to be quickly applied to or removed from the pipe when desired. A rubber cup *A* is used, which is braced by a pair of clamping plates, *B* and *C*, lying on opposite sides of the bottom of the cup. The cup is mounted on a tubular stem *D*, being secured thereto by means of jam-nuts threaded onto the stem and bearing against the opposite clamping plates. It will be observed that the inner side walls of the cup are tapered, and co-acting with them is a correspondingly tapered expander *E*. The latter is loosely mounted on



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