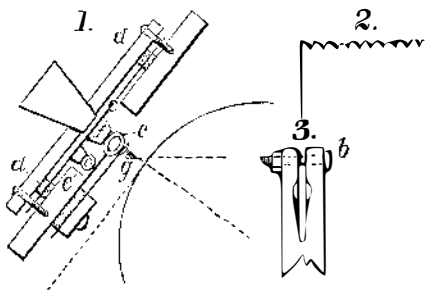
recommend a rubber or leather belt. 2. Are endless chain belts with suitable pulleys ever used for that purpose; and if so, how do they compare in efficiency and durability with spur or bevel gearing? A. Chains cannot be relied on for continued use.

(39) F. M. writes: The parts of my phonograph are made as follows: The hollow brass drum is 3 x 4½ inches, with ¾ inch steel spindle 16 inches long, costing at any brass foundry about $5 or $6. I have twenty threads to an inch on spindle, and same on drum, but not cut so deep. See Fig. 2. One of the



supports of spindle is sawed apart and drawn together by a bolt, *b*, causing the thread to cut its own way (nut) in the journal, as shown in Fig. 3. The base upon which the whole rests is 1 foot square and 3 inches thick, to give more hold to the uprights and stability to the whole. The disk, *c* (see Fig. 1), is made of leather colored press board, and is clamped between fruit jar rings, *d*, which are 2 inches in diameter. This disk must be renewed from time to time on account of its getting warped by the moisture of the voice. It gives much better results than the more substantial ferrotype. A very essential part is the proper dampening of disk by pieces of rubber tubing and small cubes of the same material. It is also of great importance to have the needle chisel-shaped, filed off at an angle of 45° to the tangent of the drum. The smallest darning needle is the best working. The reproducing funnel is 1½ foot long and 5 inches wide at the top and ½ inch at the bottom. It improves the sound if the hole for speaking in top lid is small, and also the space between disk and top lid is not to contain very much air.

Note.—Aside from the arrangement of the diaphragm and spindle support F. M.'s phonograph does not differ essentially from that described in the SCIENTIFIC AMERICAN SUPPLEMENT No. 133.—ED.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

F. & Co.—It is heavy spar—sulphate of baryta.—J. D., Jr.—Mica.—W. G. B.—No. 1 is natrolite—silica 47·2; alumina, 27·0; soda, 16·3; water, 9·5. No. 2 is pyroxene.—H. W.—The incrustation consists principally of lime carbonate, silica, alumina, silicate and iron oxide.—J. S. W.—It is a rich ore of lead—galena. It probably contains silver.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges with much pleasure the receipt of original papers and contributions on the following subjects:

Rosin in Beer. By N. D.
Magic Lantern. By G. S.
Tortoise. By S. E. C.
A Telephone. By G. F. S.
Beet Sugar. By E. T. G.
Imports and Exports, also change of Climate of Minnesota, Kansas, and Nebraska. By C. I.
Astronomy. By J. E. W.
Air Ships. By R. G.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

May 14, 1878,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired and remit to Munn & Co., 37 Park Row, New York city.

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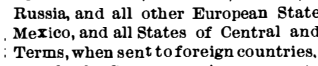

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