To all whom it may concern:

Be it known that I, PHILIPPE ROUSSILLON, citizen of the Republic of France, residing at Argenteuil, Seine and Oise, in the
5 Republic of France, have invented and useful Improvements in Nut-Cracking Machines, of which the following is a specification.

This invention has for its object to provide an improved machine for breaking the shells of hard-shelled fruits such as palm nuts, that is to say, breaking the shells without crushing the kernels. This improved machine has the advantage of dispensing with all preliminary sorting of fruits of different sizes.

The improved machine comprises one or more pairs of crushing surfaces, each pair consisting of one of the faces of a rotary disk revolving around a horizontal shaft, and a fixed wall. One or the other of these crushing surfaces is conical, so that the two surfaces form a conical space becoming gradually smaller toward the bottom, and in which the nuts fall to a greater or less depth according to their size. One or other of the said surfaces has a helical portion which approaches gradually the other surface in such a manner that the shells of the nuts are squeezed and finally broken by the approach of the generatrices of the conical disk toward the portion of the conical faces of the disks 4 and the vertical walls of the casing 2.

The improved machine as shown comprises four crushing compartments. In each crushing group the fruits drop more or less closely to the center of the apparatus according to their size as shown at 9 (Fig. 5) for example, and the radial ribs 14 of the disk 4 carry them on to the portion of the conical surfaces 15, 16, 17, 18 provided on the vertical wall of the casing situated opposite the disk. The shell of each nut is thus squeezed, then broken by the approach of the generatrices of the conical disk toward those of the helical surface. The crushed fruits fall through a hole provided for this purpose in the bed-plate.

It is to be understood that this invention is not limited to the construktional details described and shown, which are given solely by way of example. For instance, conical helical surfaces may be combined with conical surfaces for obtaining the same effects.

Having now described my invention, what

I claim as new and desire to secure by Letters Patent is;

1. A machine for breaking the shells of hard-shelled nuts comprising a fixed member and a rotatable member adapted to...
tate about a horizontal axis, said members having opposite cooperating faces and being so arranged that the width of the cracking chamber left between said faces decreases progressively toward the said axis, a helical projection on the face of the fixed member, means for feeding nuts to the top of the periphery of said cracking chamber and means for rotating the rotatable member.

2. A machine for breaking the shells of hard-shelled nuts comprising a fixed member and a rotatable member adapted to rotate about a horizontal axis, said members having opposite cooperating faces and being so arranged that the width of the cracking chamber left between said faces decreases progressively toward the said axis, a helical projection on the face of the fixed member, means for feeding nuts to the top of the periphery of said cracking chamber, circular teeth on the active faces of said members, radially arranged ribs on the rotatable member and means for rotating said member.

3. A machine for breaking the shells of hard-shelled nuts comprising fixed members and a rotatable disk mounted in the space between said fixed members, the two opposite faces of which are adapted to cooperate with the corresponding faces of the fixed members, respectively, said members being so arranged that the width of the cracking chambers left between the cooperating faces decreases progressively toward the horizontal axis of the rotatable disk, a helical projection on the faces of said fixed members, means for feeding nuts to the top of the periphery of said cracking chambers and means for rotating the disk.

4. A machine for breaking the shells of hard-shelled nuts comprising a plurality of fixed members, coaxial rotatable disks, and means for rotating said members in the intervals between said fixed members, the two opposite faces of each disk being adapted to cooperate with the corresponding active faces of the fixed members and form a cracking chamber therewith, respectively, and the fixed member between the disks having active faces on both sides, said members being so arranged that the width of said cracking chambers decreases progressively toward the axis of the rotatable disks, a helical projection on one of the cooperating faces in each pair, means for feeding nuts to the top of the periphery of the cracking chambers, a common shaft supporting the rotatable disks and means for rotating said shaft.

In testimony whereof I have signed my name to this specification.

PHILIPPE ROUSSILLON.