

Grain Huller for Rice, Spelt Wheat, Quinoa and Millet

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This invention became public domain on August 9, 1989, a gift to humanity

The two main components of the I-Tech rice huller are a hand mill/ flour mill or grain grinder and a rubber-faced disk made from:

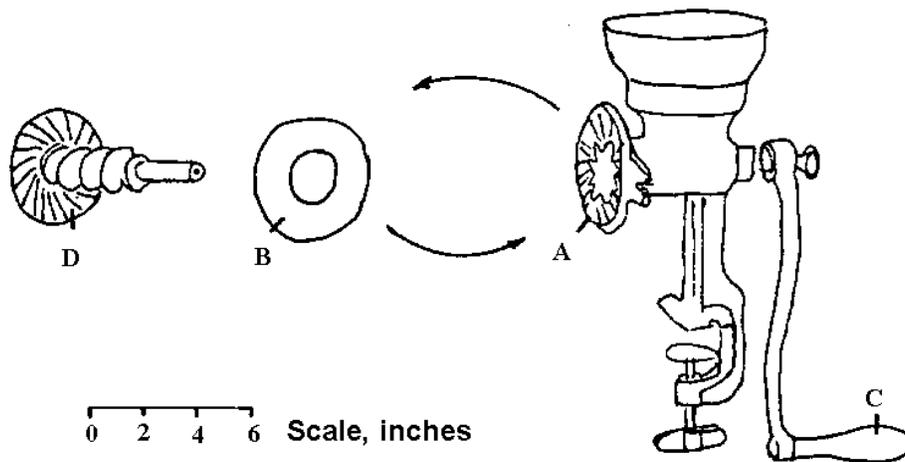
A rubber disk,

- A steel washer for mounting the rubber disk on the hand mill,
- Cyanoacrylate glue ("super glue" or crazy glue") to attach the rubber disk onto the steel washer.

The stationary disk (A) is removed and replaced by a rubber-faced disk (B). By turning the auger handle (C), rice grains are pressed between the rubber-faced disk (B) and rotating disk (D) and then rolled out. The soft rubber disk allows the hulls to be removed with minimal damage to the rice kernels. Natural (gum) rubber is used for the rubber disk because it has better abrasion resistance than synthetic rubber. The "Corona" hand mill is available from R&R Mill Co., 45 West First North Street, Smithfield, UT 84335, USA.

Short grain rice can be hulled at a rate of 200 g/min. The percentage of rice hulled varies from 75 to 99% depending on the rice cultivars, the spacing between the stationary rubber disk and the rotating abrasive disk, and uniformity of spacing between the disks. A tin plated steel burr disk may produce a black gum residue when hulling rice, until the tin is worn off. No black residue was found when using a cast iron disk or stone disk.

The grain huller also hulls millet (*Panicum miliaceum*), sesame (*Sesamum indicum*), and spelt wheat (*Triticum spelta*) as well as remove saponins from quinoa (*Chenopodium quinoa*). To "wet" hull sesame, soak the seeds in 1% (w: v) lye (sodium hydroxide) solution for 10 seconds to 5 minutes, then rinse with water and 1% solution of acetic acid (Shamanthaka Sastry et al, J. Am. Oil Chem. Soc. 46:592A, 1969; Moharram et al, Lebensmit. Wissen. Tech. 14:137, 1981). A steel burr disk is preferred for wet hulling sesame, while a stone disk is preferred for hulling spelt wheat.



Hand operated rice huller: A) stationary disk, B) rubber disk, C) handle and D) rotating disk with auger. Remove stationary disk and replace with rubber-faced disk.

In the US, the C.S. Bell model 60 (cost ~\$325) and the Corona hand mill (cost ~\$40) represent two ends of the spectrum of hand mill quality. For serious hulling, the C.S. Bell is the better choice. This mill weighs 54 pounds; its auger shaft is supported by 2 bronze bearings with oilers; the grinding disks self aligns; and the mill can be motorized. The bronze bearing with oilers allow the shaft to rotate at 300 rpm without heating up. (CS Bell, PO Box 291 Tiffin, OH 44883, phone 419-448-0791).

The Corona hand mill weighs 14 pounds; it has no bearings; the grinding disks do not self-align; and the mill cannot be motorized. (R&R Mill Co., 45 West First North, Smithfield, UT 84335, phone 801-563-3333).