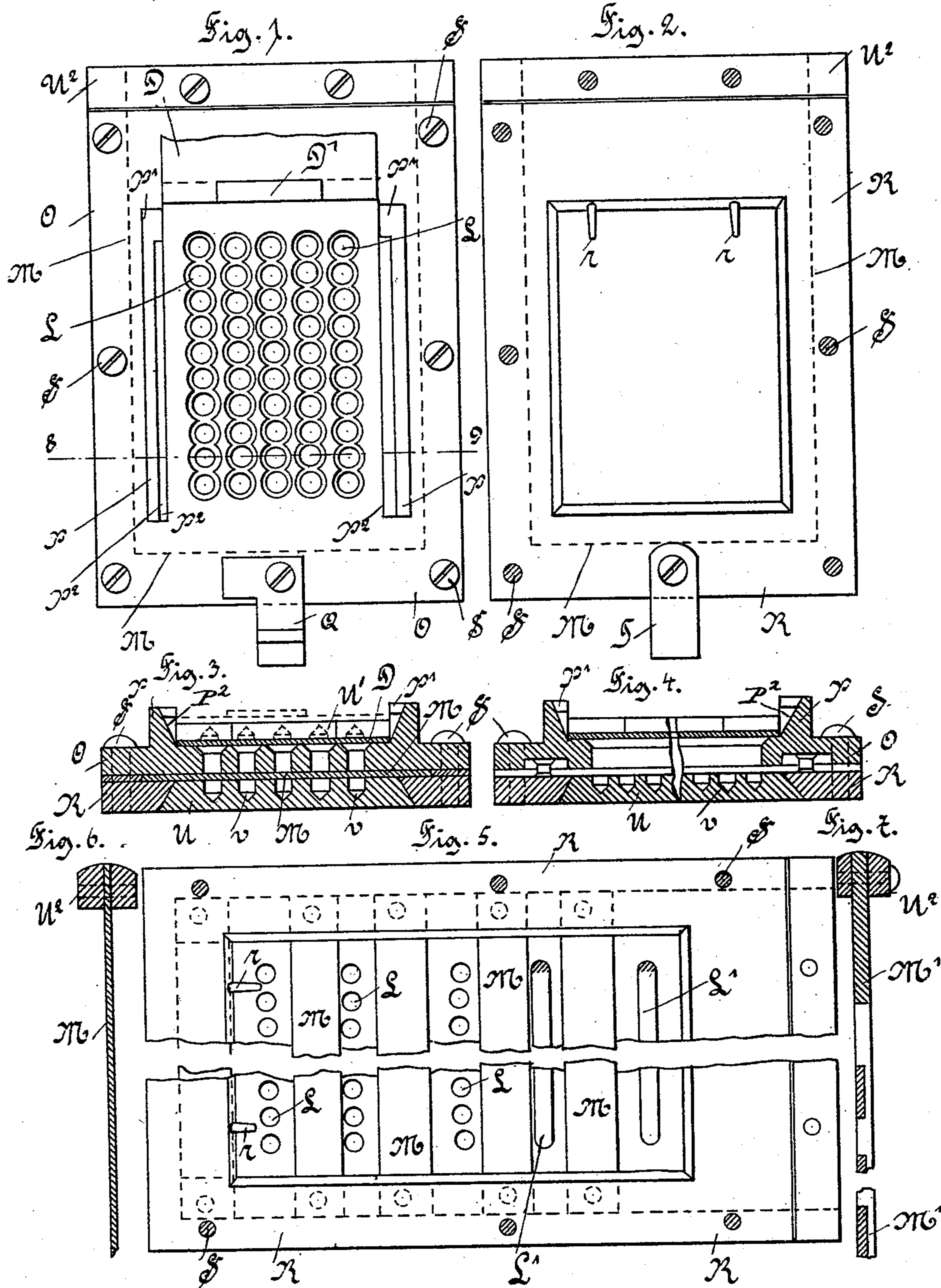


(No Model.)

P. HEINSDORF.  
APPARATUS FOR TESTING GRAIN.

No. 454,931.

Patented June 30, 1891.



Witnesses:  
G. A. Tauler  
W. H. Huth

Inventor:  
Paul Heinsdorf  
By  
William E. Fulton  
Attorney

# UNITED STATES PATENT OFFICE.

PAUL HEINS DORF, OF HANOVER, GERMANY.

## APPARATUS FOR TESTING GRAIN.

SPECIFICATION forming part of Letters Patent No. 454,931, dated June 30, 1891.

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*To all whom it may concern:*

Be it known that I, PAUL HEINS DORF, a subject of the King of Prussia, German Emperor, and a resident of Hanover, in the German Empire, have invented certain new and useful Improvements in Apparatus for Testing Grain, of which the following is a full, clear, and exact specification.

Testing or examining grain is effected in most cases by cutting a greater number of grains through—for instance, from thirty to fifty—and by attentively examining the fresh cuts attained, the appearance of the fresh cuts, corresponding to the quality of the grain, enabling the person to form a pretty reliable judgment.

I am well aware that there exists already apparatus for testing grain in which a larger number of grains is cut through at once, and by means of which all the fresh cuts may be examined at one time. The apparatus consist of an under plate provided at one side with a handle and at the other side with a projection, on which latter is placed a pin for receiving and holding a circular knife. Said plate contains a certain number of cavities in which are placed the grains to be tested after having put on this plate an upper plate of exactly the same size and shape which contains as many holes as there are cavities in the under plate. Both plates and the circular knife between them are held together by a female screw attached to the screwed pin. After having turned said knife outward and filled the holes and cavities each with a grain the handle of the knife and that of the casing are pressed against each other, so as to carry the knife into the slit between both plates, and thus to cut all the grains through at the same time.

This apparatus, though apparently well adapted for its purpose, has several great disadvantages and inconveniences which render it not only unreliable and dangerous, but decrease its fitness in a high degree. These inconveniences and disadvantages alluded to consist, first, in the impossibility of testing or comparing two or more kinds of grain at once, as the grains contained in the holes and cavities must be taken or thrown out of the latter before fresh grain can be cut, whereby the cuts of the first filling are not only partly injured, but become mixed up and thus are not adapted for further correct examination; sec-

ondly, in the grains springing out of the holes during cutting, whereby a part of the grains put in are lost; thirdly, in the irregular displacement of the grains caused by the use of a circular knife the appearance of the cuts will vary and thus occasions false conclusions as to the quality; fourthly, in rendering the circular knife unfit for further use by any infraction of its edge or periphery, and, fifthly, in the great danger caused by the circular knife as its free and unprotected edge leaves the slit and pushes against the hand at every movement of the apparatus. All these faults of the old apparatus are entirely avoided or overcome in the new apparatus described hereinafter, and in order to make my invention more clear I refer to the accompanying drawings, in which similar letters denote similar parts throughout the several views, and in which—

Figure 1 is an upper view of the apparatus, lid D being opened to expose the holes L. Fig. 2 is an under view of the same. Fig. 3 is a vertical section taken on the line 8 9 of Fig. 1. Fig. 4 is a vertical section through a modified form. Fig. 5 is an under view of the modified form. Fig. 6 is a detail of Fig. 1; and, finally, Fig. 7 is a detail of Fig. 5.

The new corn-tester consists of an upper plate O, having a number of holes L, as well as two flanges or ribs P P, each of the latter being provided with a nose or projection P' and with an oblique surface P<sup>2</sup>. A rectangular frame R, of same size as plate O, is secured to the latter by means of screws, pins, or rivets S in such a manner that a small space or slit is left between them, in which a knife M may be moved to and fro. Said knife has a handle U<sup>2</sup>, corresponding in breadth with the breadth of the whole apparatus. Two pins r r are fixed to a side of the inner space of frame R, Fig. 2, and are adapted to hold a plate U, Fig. 3, which is secured then firmly in place by a turn-button T, Fig. 2. Said plate U fills the inner space of frame R and has as many cavities v in it as there are holes L in the upper plate O, the cavities corresponding in size and position perfectly to said holes. All these latter may be covered by a lid D, attached to plate O by a hinge D'. The space above lid D and between the ribs P P contains a plate U' of exactly same size, shape, and construction as plate U within frame R, and is adapted to replace plate U,

as will be explained hereinafter. In some cases two or even more of such spare plates U' may be provided, and they are held in position (when not in use) by the noses P' P' at one side, Fig. 1, and by a rectangular turn-button Q at the other. In this state the apparatus may be worn in the pocket. Now, when wishing to test or examine one or several kinds of grain the spare plates U' are removed and lid D is opened. The holes L are exposed thereby and each of them is filled with a single grain, which thus lies with a half in a cavity v and with the other half in a hole L. Knife H is of course drawn out before as much as necessary to free all the holes. Lid D is then closed again and knife M is pushed into the apparatus, whereby all grains are cut. Turn-button T is removed then from the under plate U and the latter is taken away from frame R, showing now fifty cuts of equal section, ready for examination. By now turning the apparatus and drawing knife M outward the cuts contained in the upper plate U may be regarded and examined too. In case this number be not thought sufficient for reliable judgment the other plate U' is put into frame R, and the halves contained in plate O are thrown away, while plate U with its halves is preserved. The apparatus is filled then anew and the grains cut through. Thus I obtain one hundred and fifty halves of the grains, which is certainly a sufficient number from which to form a reliable judgment. In case several kinds are to be compared the second filling of the apparatus is done with the second kind, and the third filling of it with the third kind, while fifty fresh cuts of each kind are received and preserved in the respective under plates.

It may be preferred in certain cases to have slits instead of the holes in the upper plates, as shown, for instance, by L' in Figs. 4 and 5, and it may also be preferred in other cases to have several knives instead of only one.

In the modification represented in Fig. 5 of the drawings the upper plate is provided with holes L, as well as with slits L', and a special knife is provided for each series of holes L or for each slit L', respectively. All the knives are fixed to the legs of a slide M', having also a handle and replacing the single knife M of Fig. 1. The knives are arranged parallel to each other and are guided in parallel planes between plate O and frame R in same manner as the single knife.

Thus the disadvantages and inconveniences of the old construction are avoided and overcome by, first, the exchangeable under plate, as it may be put aside with cuts, and may be replaced by another similar plate adapted to also receive and preserve cuts of the same or of any other kind; secondly, the arrangement of a lid adapted to close the holes during the time of cutting; thirdly, the use of straight knives operating in a plane parallel with the plate O and frame R displaced in cutting;

fourthly, the easy exchangeability of the single knife or of one or more of the parallel knives, and, fifthly, the perfect closing or covering of the cutting-edge of the knife by aid of the upper plate and under frame.

It results from the advantages above stated that the effect of my new grain-tester excels by far that of the old ones known hitherto.

Having now fully described the nature of this invention, what I desire to secure by Letters Patent of the United States is—

1. In a device of the character described, the combination, with an upper plate provided with grain-receiving openings and a lid adapted to close the latter, of a lower plate provided with cavities corresponding in position and adapted to register with the openings in the upper plate, said plates being so arranged as to leave a space between their opposing faces, and a cutting-blade fitting and adapted to operate within the space between the plates, as and for the purpose specified.

2. In a device of the character described, the combination of an upper plate provided with grain-receiving openings, with a supporting-frame, a plate carried thereby and adapted for ready removal therefrom and provided with cavities corresponding in position and adapted to register with the openings in the upper plate, said plates being so arranged as to leave a space between their opposing faces, and a cutting-blade fitting and operating within the said space, as and for the purpose specified.

3. In a device of the character described, the combination of an upper plate provided with grain-receiving openings, a supporting-frame, and a plate provided with cavities, said plate being adapted to be removably carried by the said upper plate and to be arranged within the supporting-frame beneath the upper plate, whereby the cavities in the lower plate will register with the openings in the upper plate, and a cutting-blade adapted to operate between the opposing faces of said plates, for the purpose specified.

4. In a device of the character described, the combination, with the upper plate provided with the flanges or ribs and the grain-receiving openings, of a supporting-frame and a plate provided with cavities, said plate being adapted to be removably carried between the ribs of the upper plate and to be arranged within the supporting-frame beneath the latter plate, with the cavities thereof registering with the openings in the upper plate, and a cutting-blade operating between the opposing faces of said plates, for the purpose specified.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

PAUL HEINS DORF.

Witnesses:

JOHS. KRACHE,

ALB. PEPPER MILLER.