

J. E. GASTON.
CORN GRADER.
APPLICATION FILED SEPT. 28, 1909.

943,869.

Patented Dec. 21, 1909.

FIG. 1.

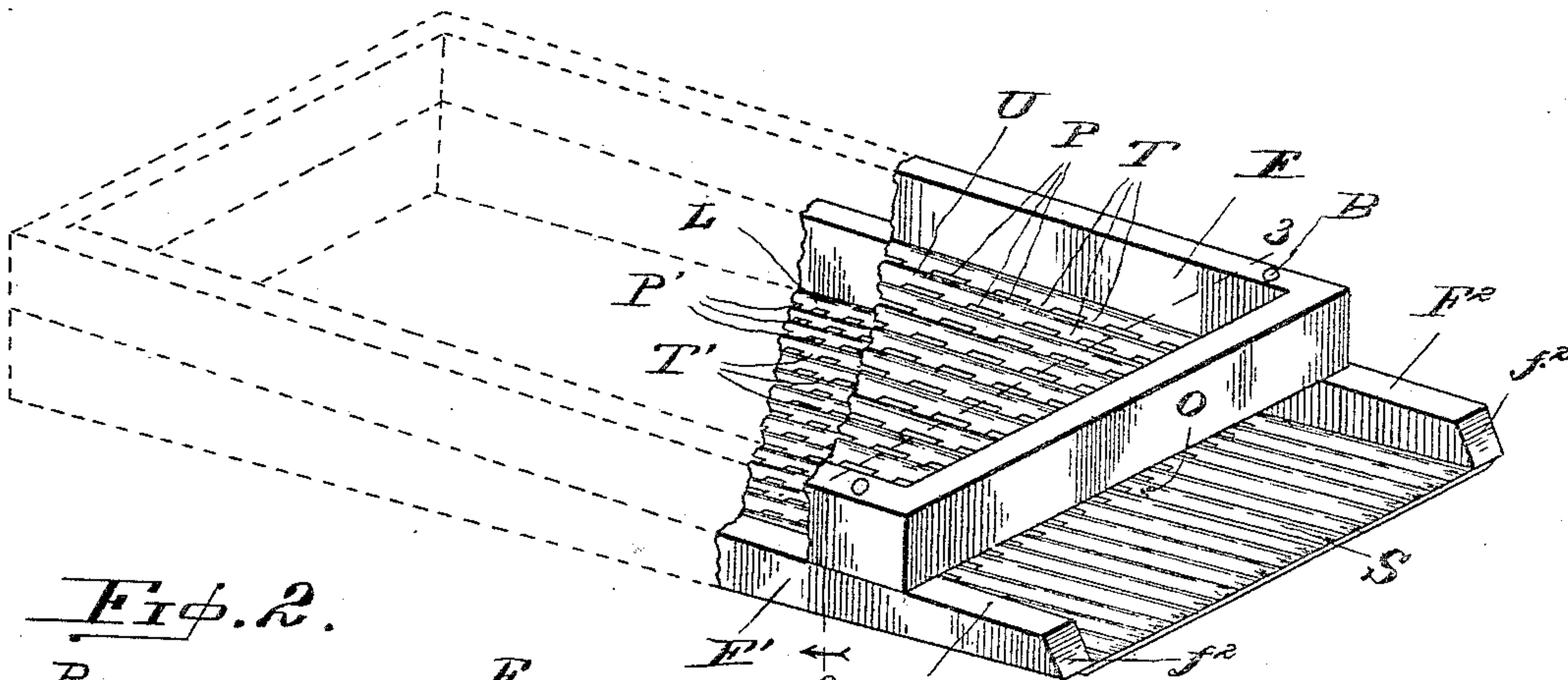


FIG. 2.

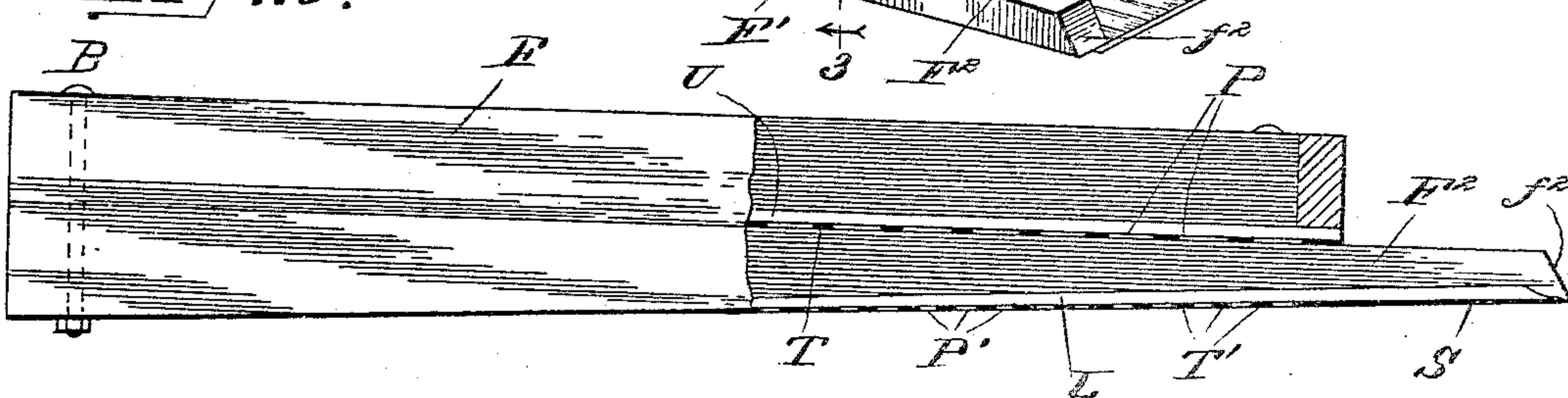


FIG. 3.

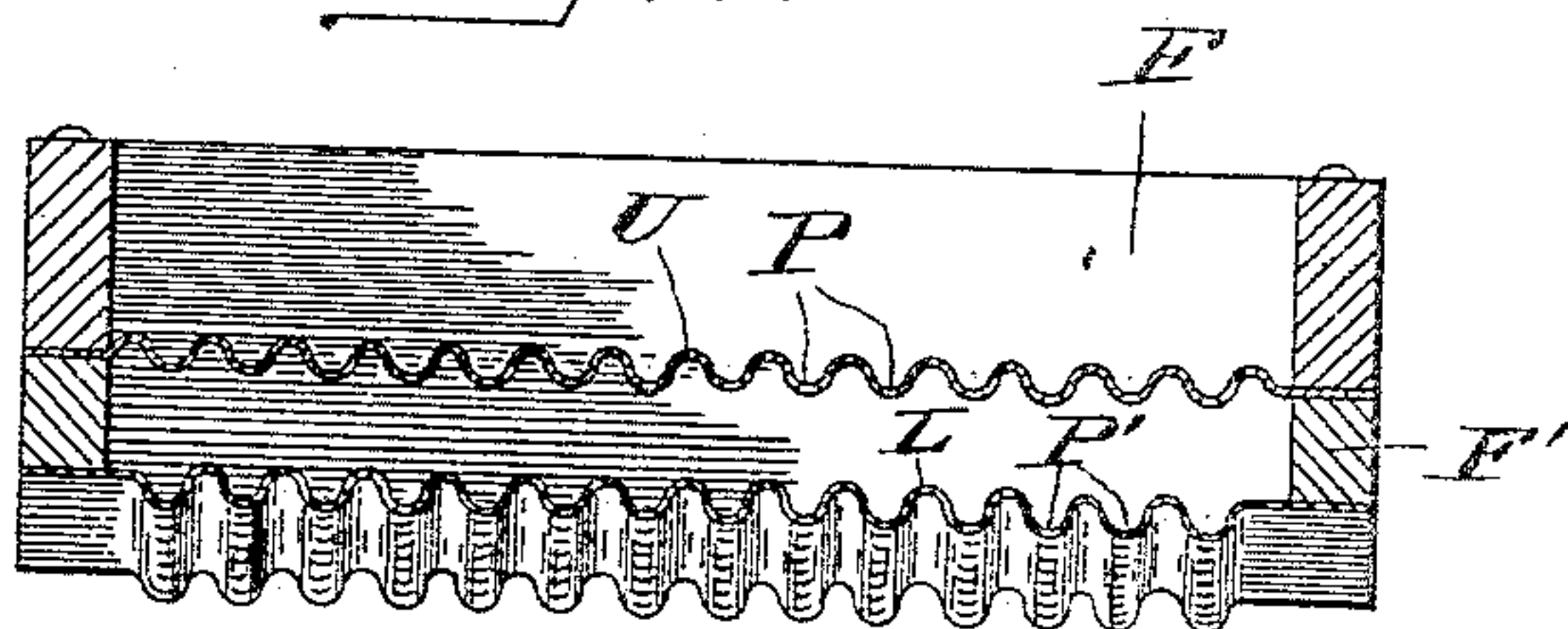
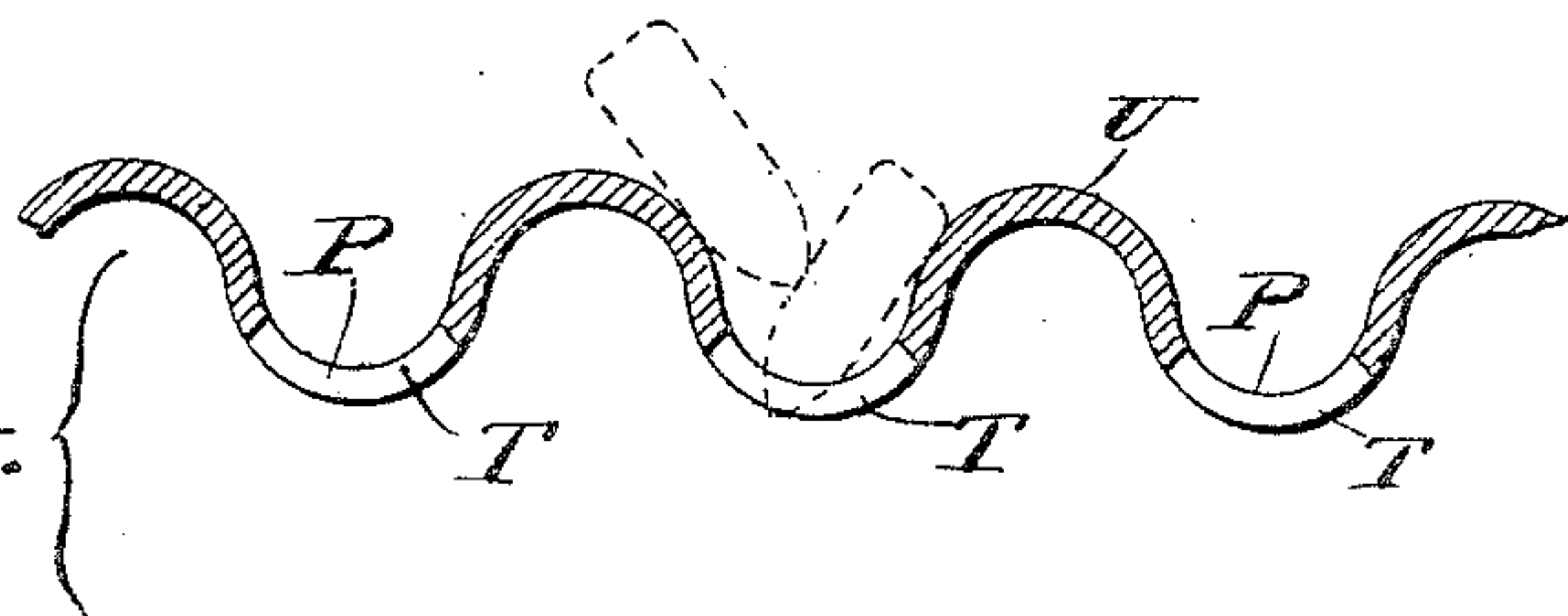
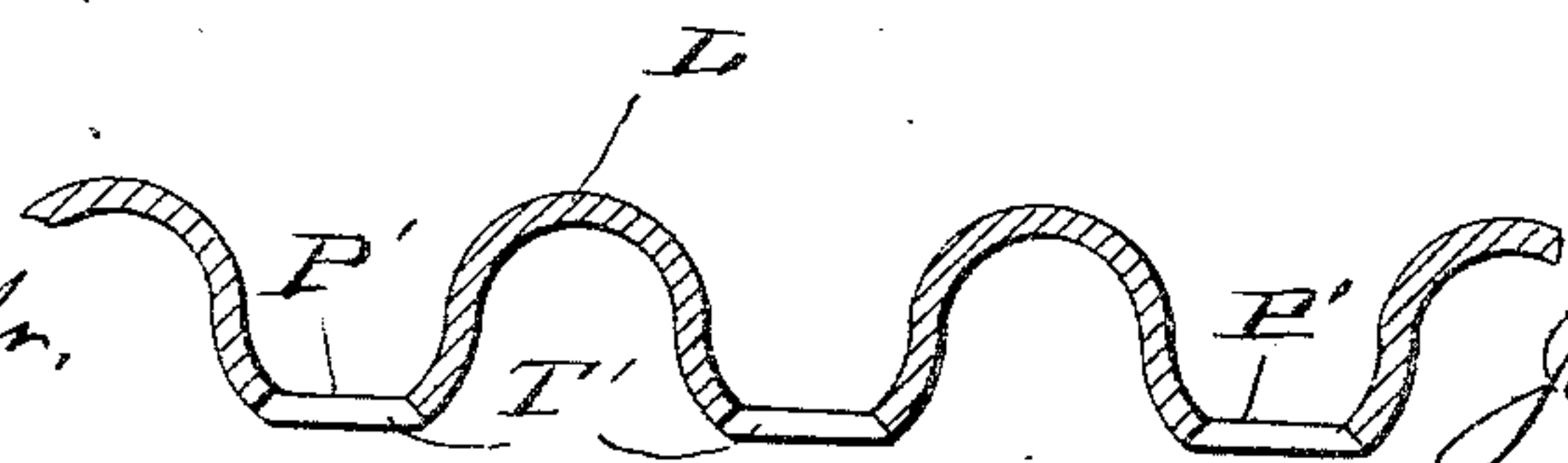


FIG. 4.



Witnesses:
Wm. E. Volk, Jr.
C. J. Allen



Inventor:

James E. Gaston,

by Collamer & Co., Attorneys

UNITED STATES PATENT OFFICE.

JAMES E. GASTON, OF COCHRANTON, PENNSYLVANIA.

CORN-GRADER.

943,869.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES E. GASTON, a citizen of the United States, and resident of Cochranton, Crawford county, State of Pennsylvania, have invented certain new and useful Improvements in Corn-Graders; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description terminating with claims particularly specifying the novelty.

This invention relates to corn graders, more especially of the hand type; and the object of the same is to produce a device for separating from a mass of kernels of corn those which do not conform with the "standard" size prescribed by the manufacturers of corn planting machines—thus removing the kernels which are too large or too small for the machine and the pieces which are too small to possess the desired germinating properties which the standard size of kernels has.

In a prior application filed by me October 22, 1908 and bearing Serial Number 459,046 I show and describe two screens of different mesh arranged in parallelism within a frame adapted to be shaken to and fro by hand, but I have found by use that the standard and small size kernels after passing through the upper screen of larger mesh are delivered out the outlet from the lower screen of smaller mesh so rapidly by the agitation which answers for the upper screen that many of the small size kernels are carried along with the standard seed without being sifted through into the waste.

The present invention is designed to overcome this objection by the provision of means for retarding the delivery of the kernels resting upon the lower screen.

To this end the present invention consists broadly in the construction of a grader having two superimposed (and preferably corrugated) screens of different mesh arranged in a frame which has an opening or outlet at the lower end of the finer screen, this screen converging toward the upper and coarser screen as they approach the outlet.

The invention also consists in details of construction for carrying out this general idea, and in other details which may or may not be used therewith—all as described below and shown in the accompanying drawings, wherein:

Figure 1 is a perspective view of this de-

vice complete and partly broken away, Fig. 2 is a view giving a side elevation of the upper and a longitudinal section of the lower end of the same, Fig. 3 is a cross section on the line 3—3 of Fig. 1, and Fig. 4 is a cross section through the two screens.

The letter F designates a rectangular frame made preferably of wood and of about the outside dimensions of 12 by 18 inches, and F' is a lower frame made either integral with the sides and upper end of the upper frame or by preference of separate parts attached to the lower edges of the upper frame-parts by screws or bolts B. The uppermost part is by preference of equal depth throughout, but the side pieces of the lowermost part—instead of being also equal throughout as in my former application—are of greater depth at the upper than at the lower end of the frame, where they project for a short distance as shown at F² and may be beveled at their lower extremities as shown at f², and these projections form the sides of a spout extending under the lower end of the uppermost frame-part F through an opening O caused by the absence of any lower end member to the lowermost frame-part. Carried by said frame there are two screens, an upper one U and a lower one L, and when the frame is made in two parts the edges of the upper screen may well be clamped between the meeting edges of the two frame-parts while the lower screen is attached beneath the edges of the lowermost frame-part. If the latter be projected as at F² to form a spout as above described, the lower screen will be continued (though without its perforations) as at S to the extremities f² as best seen in Fig. 1. By preference both screens are made of longitudinally corrugated sheet metal, the corrugations of the upper being 5/8 of an inch wide by 5/16 deep, and those of the lower being also 5/8 of an inch wide but 6/16 deep—thus 1/16 deeper than the corrugations of the upper screen. However, I do not confine myself to these sizes, nor limit myself to making one set of corrugations deeper than the other. By preference also the corrugations are rounded rather than angular, and the tangs T in the upper screen (between its perforations yet to be described) are also rounded, while the tangs T' in the lower screen are somewhat flattened as best seen in Fig. 4.

In the valleys of the upper screen U are

punched rectangular perforations P $7/32$ of an inch wide by about 1 inch long. In the valleys of the lower screen L are punched rectangular perforations P' also $7/32$ of an inch wide but $10/32$ of an inch long. As seen in Fig. 3, the corrugations are by preference superimposed over each other, though the position of the perforations with respect to each other is immaterial so long as their longest diameters stand coincident with the valleys. If this grader is formed with a spout S rather than cutting off the lowermost frame-part F' flush with the lower end of the uppermost part and leaving simply an outlet opening O, the corrugations in the lower screen will by preference be continued but the perforations omitted throughout its length; but in any event the perforated areas of the two screens are coincident.

In the use of a corn grader of this construction, a mass of kernels of corn is poured into the device upon the upper screen, and the side bars of the frame are grasped between the hands of the operator with the outlet opening O remote from him. He then imparts to the device a shaking motion, mostly longitudinally of the framework and the corrugations but occasionally laterally in case the mass should not be evenly distributed over the upper screen. This agitation causes the mass to spread out into a comparatively thin sheet so that the kernels in all parts have a free opportunity to get at the perforations. The larger kernels impinge against the smaller kernels and pieces, all of which latter drop through the perforations and finally leave on the upper screen only those above standard size. Falling onto the lower screen which is subject to the same agitation, the standard size of kernels impinge against the smaller pieces, all of which latter pass through this screen into the "waste." But the object of the device is to weed out the "standard" size of seed corn, and as those kernels too large are retained on the upper screen and those too small are passed into the waste, the seed kernels are retained on the lower screen and may from time to time be dumped out the outlet or through the spout into a receptacle whence they can be conveyed to the planting machine.

Herein lies the advantage of the present construction over my former device above referred to. The initial mass will by preference be deposited at about the center of the upper screen, or perhaps nearer its upper end, and agitation will spread it out as stated. But it will be found that when the operator inclines the device slightly downward away from his body toward the outlet, the action upon the mass on the lower screen, if it stand parallel with the upper, is not satisfactory as many of the too small kernels and pieces are carried out the outlet by the

flow of the mass over this screen. Hence I have devised means for retarding the flow of this lower mass over the lower screen, which consists in causing the latter to converge toward the upper screen to the outlet, as shown. Therefore, when the device is held so that the upper screen is inclined slightly downward from the operator, the lower screen stands substantially horizontal and the agitation serves simply to spread out the mass thereon without giving it a tendency to flow out the outlet; though at any time the device can be further inclined to dump the seed kernels into the receptacle, after the small size kernels and pieces have been thoroughly removed.

I do not confine myself to the precise details of construction or the measurements herein set forth. As suggested, the spout could be entirely omitted, as well, perhaps, as the corrugations; the frame might be all in one piece on each side, and the manner of attaching the screens thereto is obviously immaterial; that part of the frame above the upper screen might be so deep as to constitute a hopper, although I consider it advisable in a hand device to have the several pieces of the two frame-parts of nearly equal depth; and the screens might be of other than sheet metal, if the dimensions and disposition of the perforations properly effected the weeding out of seed kernels of standard size from those too large and too small.

What is claimed as new is—

1. A hand seed corn grader comprising two rectangular screens converging toward one end, the upper having perforations elongated in the direction of convergence and the lower having perforations of the same width but shorter, and a frame surrounding the lower screen and having an opening where it stands nearest the upper screen and surrounding the upper screen on all sides and forming a hopper-like receptacle above it, for the purpose set forth.

2. A hand seed corn grader comprising two rectangular screens converging toward one end and corrugated in the direction of their convergence, both having perforations in their valleys and those in the upper screen being longer than those in the lower, and a frame surrounding both screens and rising above the upper in a hopper-like receptacle, the frame having an opening between the screens at the point where they stand nearest each other.

3. A hand seed corn grader comprising a frame in two parts, the uppermost being rectangular and of equal depth throughout, and the lowermost having one deep end piece, two side pieces tapering in depth toward the other end, and the latter omitted beneath that end of the uppermost part; and two screens, one clamped between the

frame-parts and having elongated perforations, and the other carried beneath the lowermost frame-part so as to converge toward the first screen at the open end of this part and having perforations of the same width as but shorter than those in the upper screen, for the purpose set forth.

4. A hand seed corn grader comprising a frame in two parts, the uppermost being of equal depth throughout, and the lowermost having one deep end piece, two side pieces decreasing in depth to and projecting beyond the other end of the uppermost, and the other end piece omitted; and two screens of different mesh, the coarser carried by the uppermost frame-part and the finer carried by the lowermost and having a perforated area coincident with that of the coarser and an imperforate area connecting its projections and forming a spout.

5. A hand seed corn grader comprising a frame in two parts, the uppermost being rectangular and of equal depth throughout, and the lowermost having one deep end piece, two side pieces decreasing in depth to and projecting beyond the other end of the uppermost, and the other end piece omitted; and two screens of different mesh, the coarser clamped between the frame-parts, and the finer secured beneath the pieces of the lowermost frame-part and having a perforated area coincident with that of the coarser and an imperforate area connecting its projections and forming a spout.

6. A hand seed corn grader comprising a frame in two parts, the uppermost constituting a hopper-like receptacle, and the lowermost having one end piece coincident with one end piece of the uppermost, its other end being omitted to form an outlet opening, and two side pieces decreasing in depth and extending from its end piece beneath the side pieces of the uppermost and projecting beyond said opening; and two corrugated sheet metal screens of different mesh, the coarser carried by the uppermost frame-part and perforated throughout and

the finer carried by the lowermost and having a perforated area coincident with that of the coarser and an imperforate corrugated area connecting its projections beyond said opening and forming a spout.

7. A hand seed corn grader comprising a frame in two parts, the uppermost constituting a hopper-like receptacle and being rectangular in contour, and the lowermost having one end piece coincident with one end piece of the uppermost, its other end being omitted to form an outlet opening, and two side pieces decreasing in depth and extending from its end piece beneath the side pieces of the uppermost and projecting beyond said opening; and two corrugated sheet metal screens of different mesh, the coarser held in the uppermost frame-part and perforated throughout, and the finer secured beneath the pieces of the lowermost frame-part and having a perforated area coincident with that of the coarser and an imperforate corrugated area connecting its projections beyond said opening and forming a spout.

8. A hand seed corn grader comprising a frame in two parts, the uppermost constituting a hopper-like receptacle and being rectangular in contour, and the lowermost having one end piece and two side pieces coincident with those of the uppermost and its other end piece omitted to form an outlet opening, a screen of coarser mesh carried by the uppermost frame-part, and a screen of finer mesh carried by the lowermost frame-part and leading to said opening, said finer screen converging toward the coarser at the open end of the frame, for the purpose set forth.

In testimony whereof I have hereunto subscribed my signature this the eighteenth day of September, A. D. 1909.

JAMES E. GASTON.

Witnesses:

ROBERT C. CURTIS,
F. A. CURTIS.