

D. HOGAN.

APPARATUS FOR CLEANING OR SCOURING AND CLIPPING OATS, &c.

No. 547,398.

Patented Oct. 1, 1895.

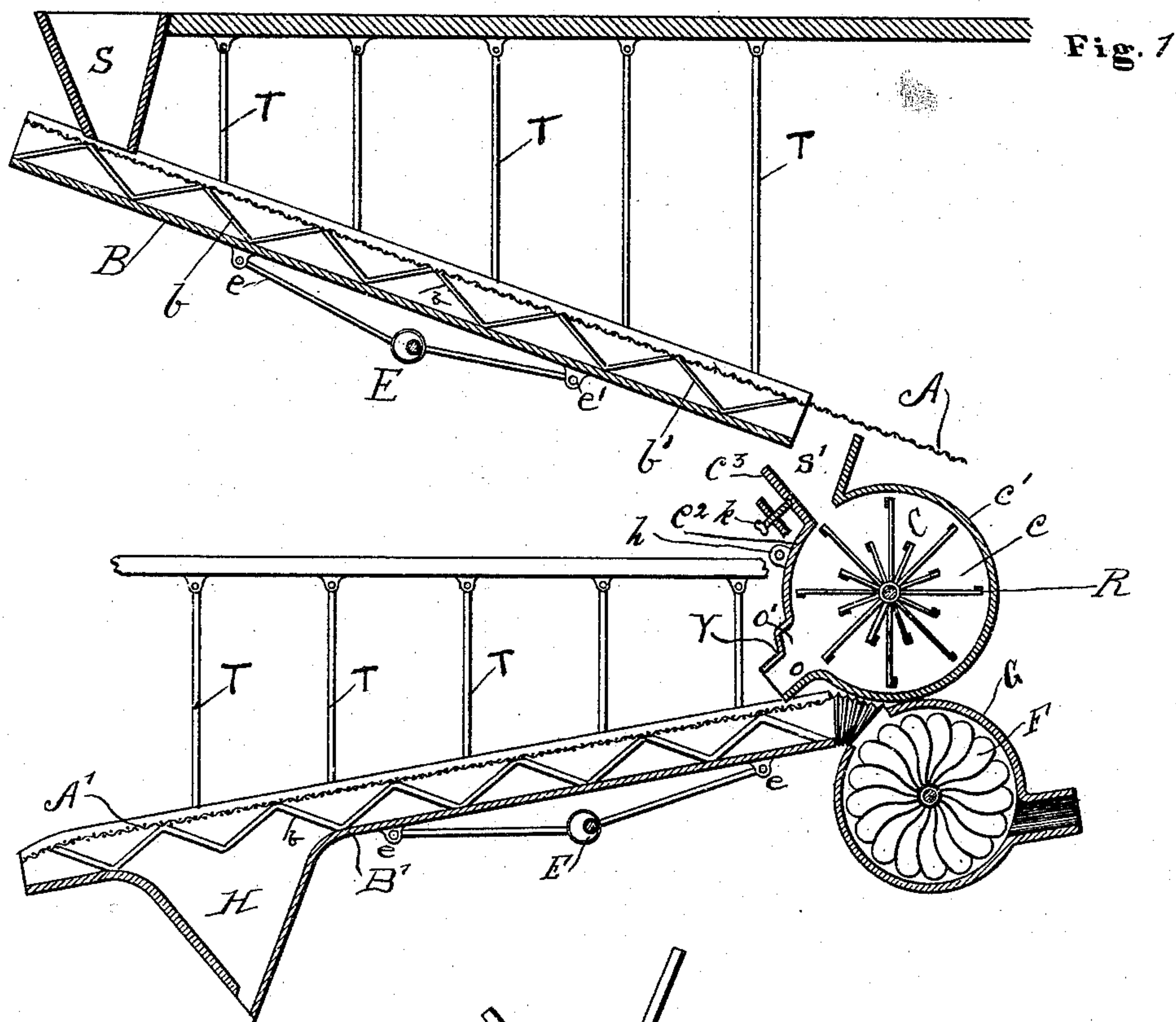


Fig. 7

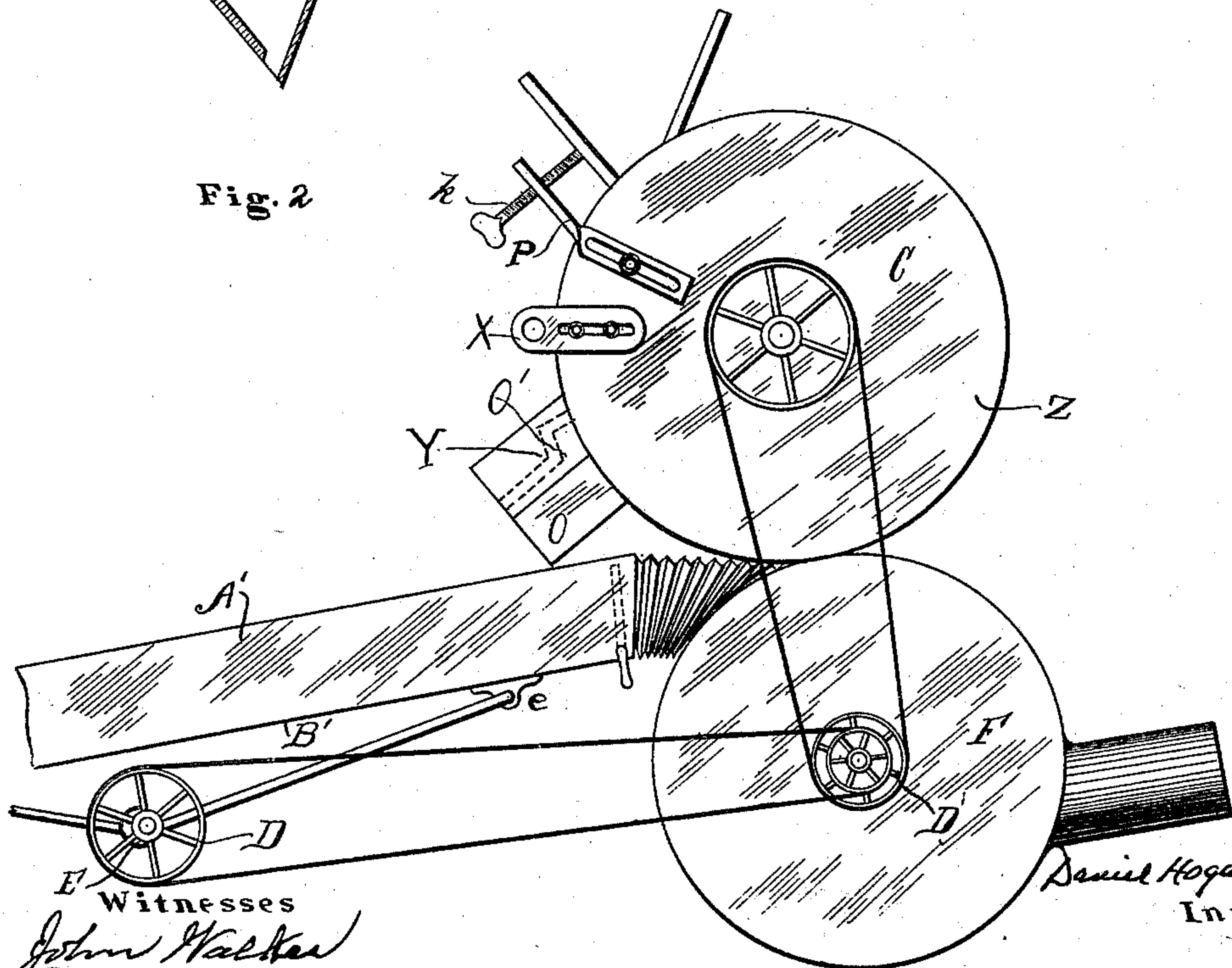


Fig. 2

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(No Model.)

3 Sheets—Sheet 2.

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Fig. 3

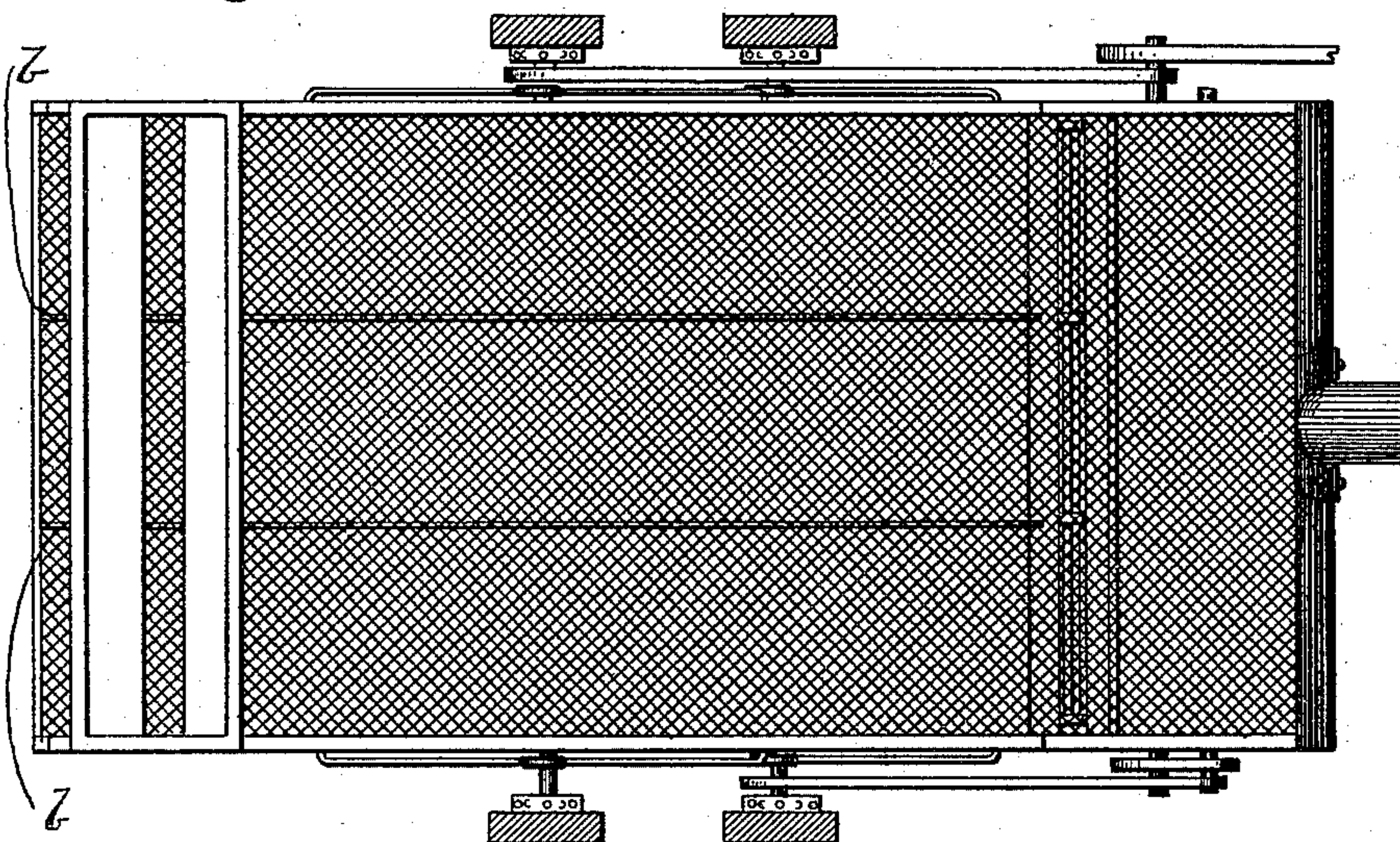


Fig. 4

Fig. 5

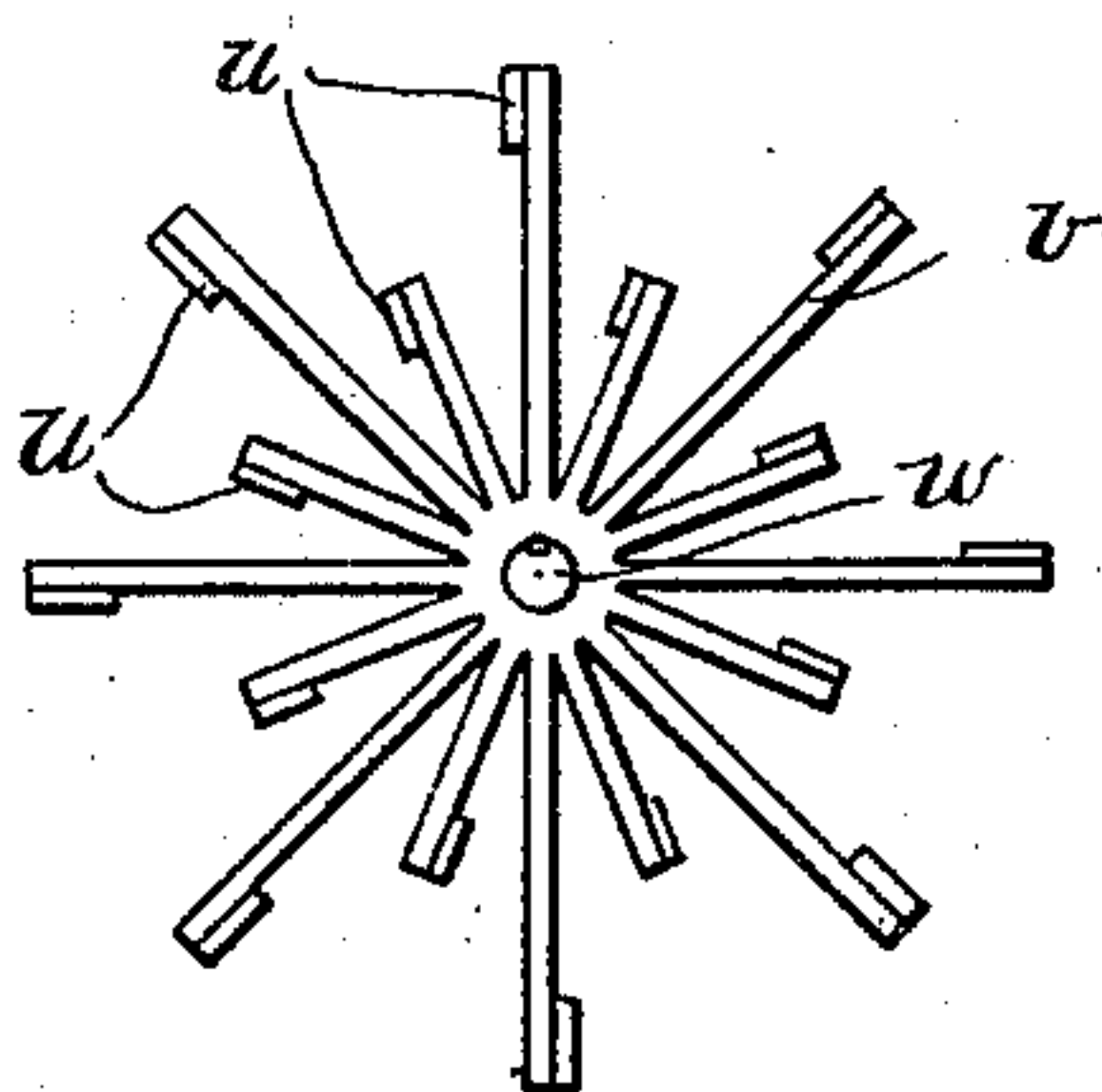
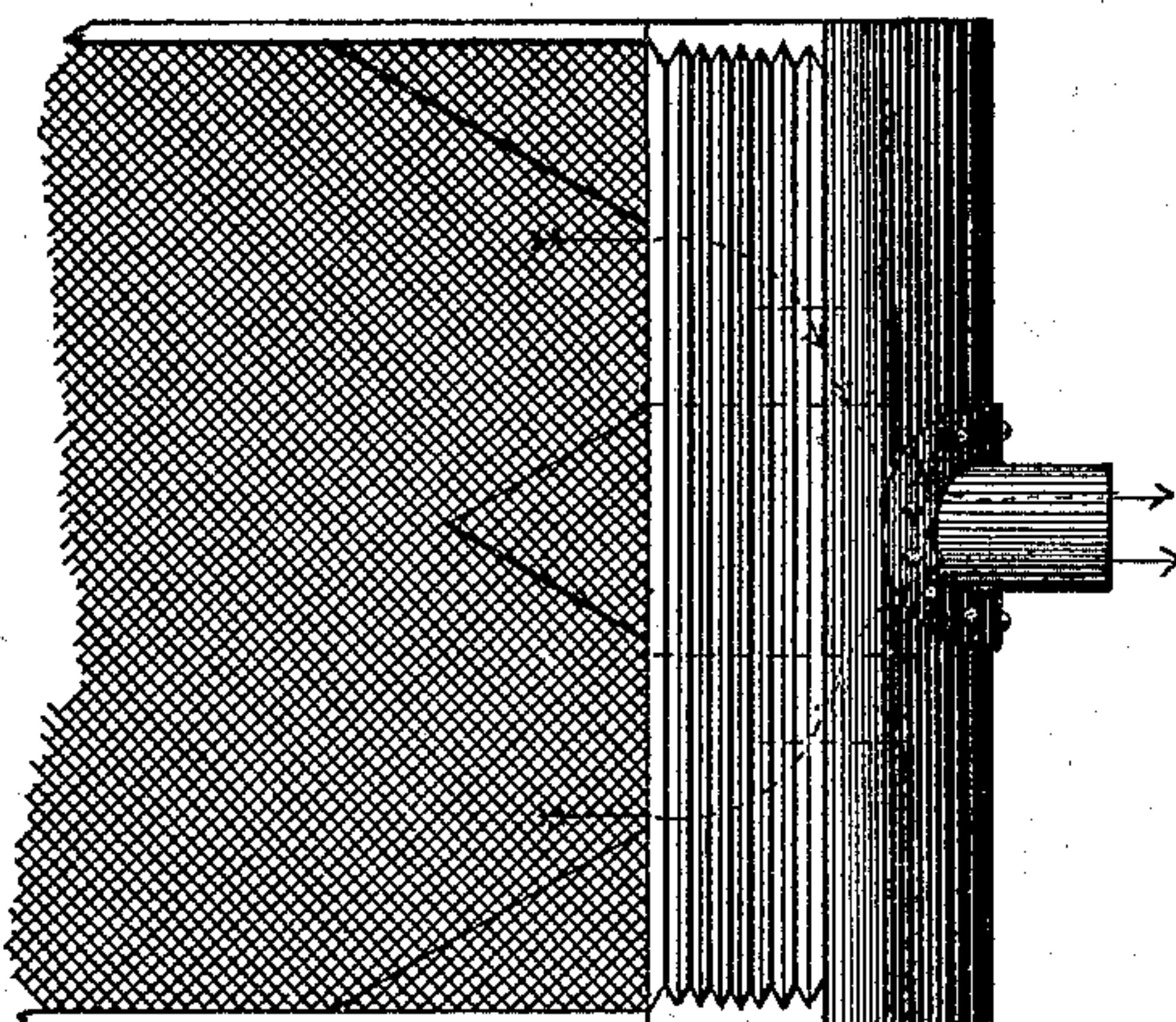
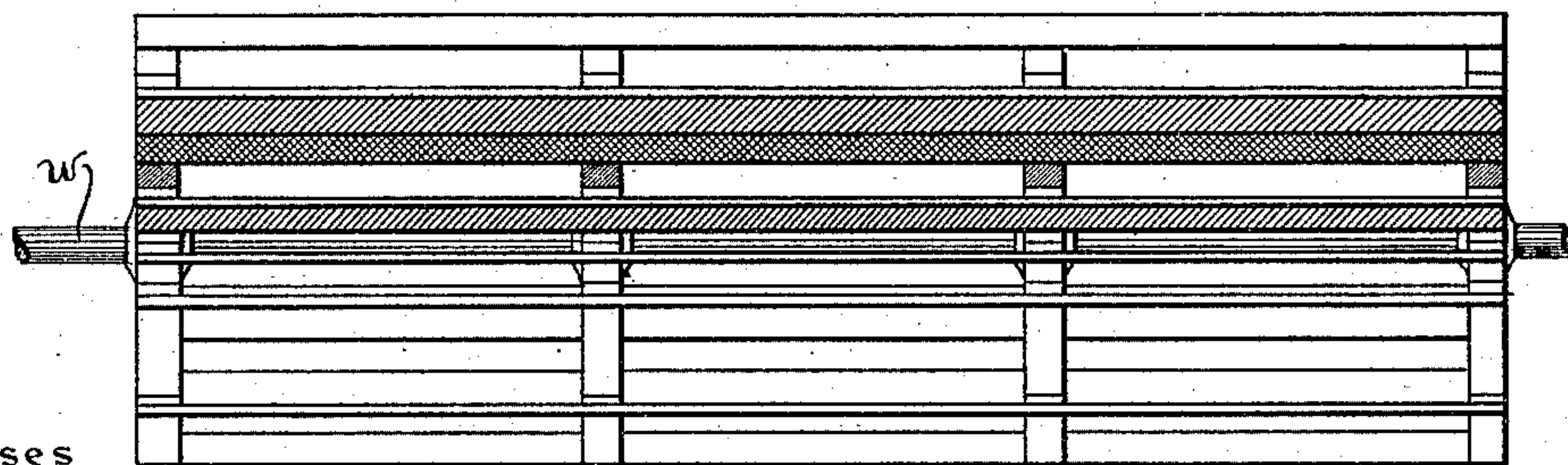


Fig. 6



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3 Sheets—Sheet 3.

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Fig. 7.

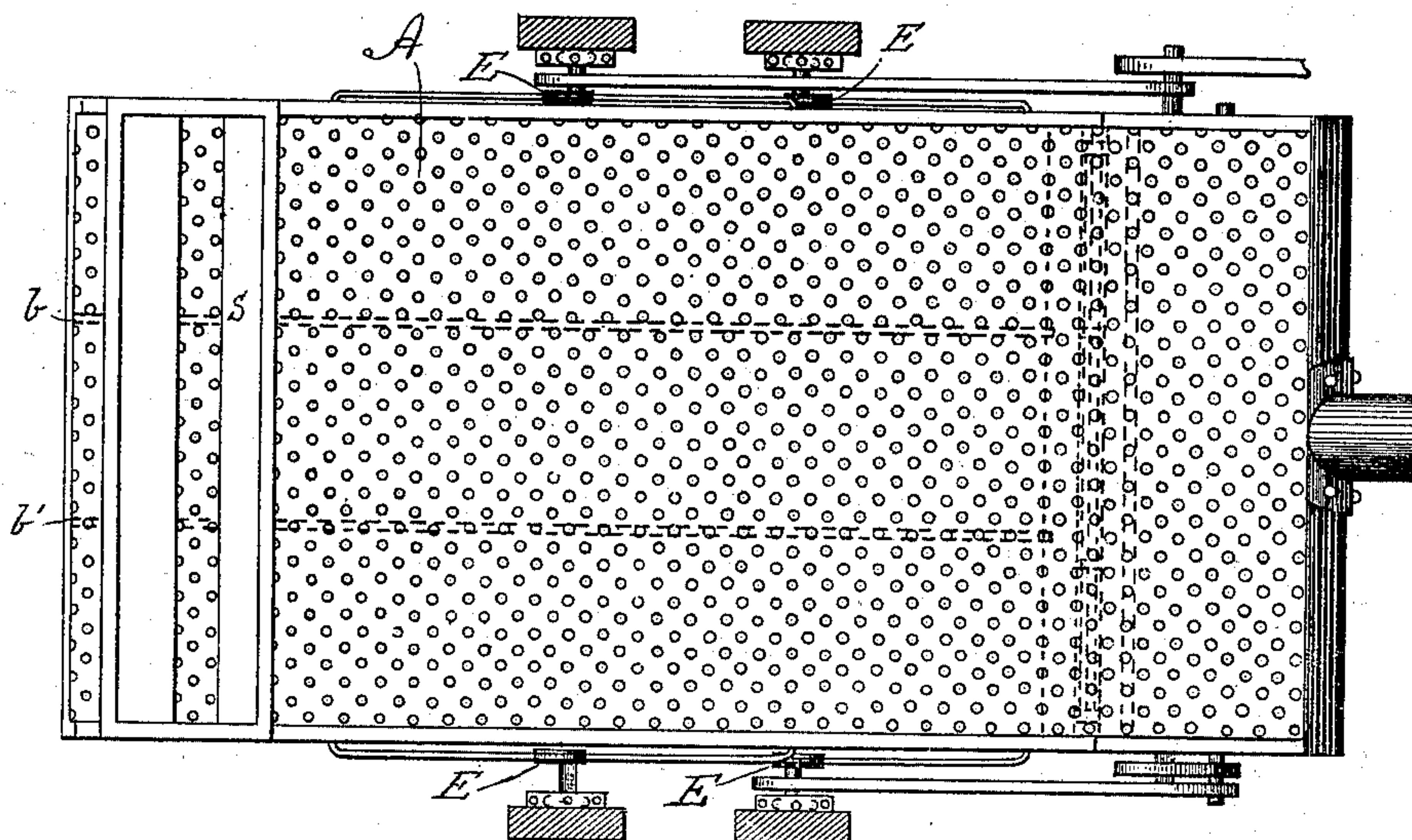
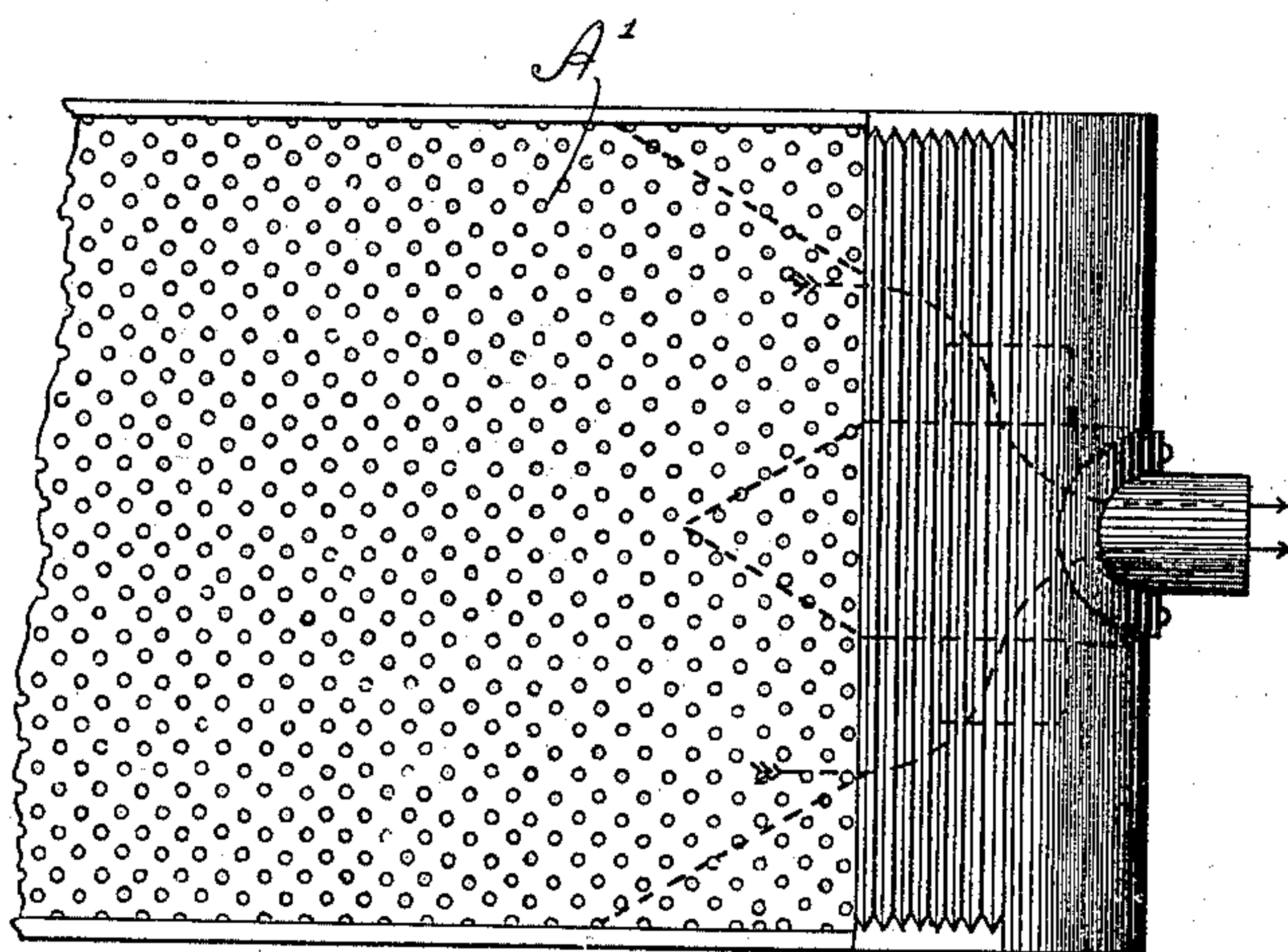


Fig. 8.



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UNITED STATES PATENT OFFICE.

DANIEL HOGAN, OF CHICAGO, ILLINOIS.

APPARATUS FOR CLEANING OR SCOURING AND CLIPPING OATS, &c.

SPECIFICATION forming part of Letters Patent No. 547,398, dated October 1, 1895.

Application filed May 11, 1895. Serial No. 548,999. (No model.)

To all whom it may concern:

Be it known that I, DANIEL HOGAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Cleaning or Scouring and Clipping Oats and other Small Grains, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional side view of my apparatus with the side removed, showing the working parts. Fig. 2 is a side view showing the outside belt and other connections between the working parts. Fig. 3 is a top view of the screens. Fig. 4 is a top view of part of the lower screen adjacent to the exhaust-fan and to the cylinder containing the cleaning, scouring, and clipping reel. Fig. 5 is an end view of the cleaning, scouring, and clipping reel. Fig. 6 is a vertical sectional view of the cleaning and clipping reel. Figs. 7 and 8 are top or plan views of sheet-metal screens used instead of wire-gauze.

A, in all the drawings, is a screen upon which the grain to be cleaned or clipped is fed from above through the spout S. The meshes of the screen A are of a size sufficient to allow the grain to pass readily through it onto the tight bed or bottom B, upon which it is carried to the cylinder C through spout s' to be cleaned and clipped, while the larger sticks, stones, leaves, and other trash are carried along over and past the opening of the cleaning-cylinder C on the extension of the screen A, as shown in the drawings.

The screen A and the bottom or bed B are rigidly fastened to each other and are secured in proper frame by hangers T, that both sieve A and bed B may be vibrated or oscillated vertically, laterally, or transversely, as may be desired, by eccentric E or other suitable device. Eccentric E is connected to said bed, as at e e', and actuated by a belt or other connection, substantially as shown at D D', Fig. 2, that all larger foreign bodies shall be thrown off and discharged over the tail or extension of screen A.

The screen or sieve A and bed B are inclined downward toward the cylinder C, so

that the grain will run down into the cylinder C, where it meets the reel R, as herein described. The space between the bed or bottom B and the screen or sieve A is open and unobstructed, save for the supports b b, set in longitudinal rows to sustain the screen at a proper distance from bed B.

C, Fig. 1, is a cylinder in two parts, composed of sheet metal or other suitable material, equal in length to the width of the screens A A', and is in two parts, C' and C². C' is curved into a part of a circle, corresponding to the periphery of the reel R and of about three-fourths of the circumference of said reel R. The ends of this section are fastened into circular ends Z, as shown in Fig. 2, which are then secured in proper framework. The edges of section C' are so turned as to form one portion of the lips or sides of the inlet S' and outlet O', as shown in Fig. 1.

C², Fig. 1, is a section of the case C, corresponding in length to section C' and described as follows: Material may be metal or wood, as desired. The upper lip or edge is turned outward, as shown at C³, Fig. 1, to form, with the corresponding edge of C', at suitable distance apart, the inlet or hopper S'. The other or lower edge is turned outward, as shown at Y, to form, with the lower edge of C' and at a proper distance therefrom, the outlet-spout O. This lower edge Y is shaped as shown. The inner side of spout thus formed is wider, contracting outwardly to the discharge by the formation of the angular recess O', of such extent as may be desired, varying in different-sized machines. The purpose of this recess is to receive the grain and prevent it being carried upward and around again by the scouring-reel R. This grain being thrown against this point by the action of the reel R, the tendency is to force it outward through spout O onto screen A'. This part C² is adjustable, so that the inlet and outlet spouts may be regulated to any width desired. At each end of section C² is placed a lug h, forming with a common bolt and projection X, Fig. 2, a hinge, allowing the section to be moved within certain limits, as may be found necessary. To adjust the proper openings of inlet S' and outlet O' the section

is held firmly in place by means of the thumb-screw *k* and slotted guide-piece *P*, Fig. 2, at each end of such section. This section *C*² is also arranged that it may be moved away
 5 from the reel *R*, that the grain may pass directly down from spout *S'* to discharge *O* without coming in contact with reel *R*, thus cleaning and scouring the grain without clipping or passing through the said cylinder.
 10 For this purpose the projection *X* shall be slotted at its connection to end of cylinder, that it may be moved backward or forward, as may be desired.

It being observed that the terms "clipping" and "scouring" have reference only to the action upon the grain while in the cylinder, the clipping consists in the removal or knocking off of the outside hulls or parts of the grain by the reel *R* while contained in the cylinder,
 20 and the scouring that takes place in the cylinder is caused by the friction of the grain against the blades of the reel *R* and the resistance met when it is thrown against the angular recess *o'* just before it leaves the cylinder, thereby catching the grain and affording such resistance as tends to aid the scouring process, which term "scouring" is defined to be the removal of the beards and loose hulls that yet remain on the grain after having passed
 30 through the cylinder and are by the subsequent processes removed. The cylinder scours to a certain extent. The angular recess takes a portion of what may be left, and as the grain passes along the screen *A'* it is also subject to a scouring process, which is the third and last, when it is claimed all loose hulls and beards will have been removed and the grain brightened and freshened and rendered more marketable. The grain is
 40 clipped in the cylinder only, and the term "clipping" is defined to mean that each grain of the oats or other grain having a chaff, hull, or outside covering shall be subjected to the action of the reel in operation in such a manner that the said outside covering, chaff, or hull shall be removed or detached from the kernel of such grain either in whole or in part, leaving the surface of each kernal new, more solid, and clean.

50 The grain is cleaned after it is discharged upon the sieve *A'*. By the term "cleaned" or "cleaning" is meant that all foreign substances—dust, dirt, stones, &c.—are removed, as well as all beards, hulls, or particles clipped
 55 and scoured from the grain itself, which are all separated and taken away from the grain, thereby leaving it pure and in better merchantable condition.

It will be observed that the scouring operation takes place in the cylinder in the angular recess and on the sieve *A'*. The clipping operation, where greater force is needed and used, only takes place in the cylinder. The cleaning operation only takes place after it is
 65 thrown out upon the screen *A'*, the coarser of the débris passing over, and the dust, beards,

and finer particles being drawn through said screen *A'*.

It will be seen that while the operation of cleaning and scouring can be performed to a measurable extent without the use of the reel
 70 *R* and cylinder, yet the operation of clipping can only be performed by their use.

A' is a screen of a width equal to the length of the cylinder *C*, and with meshes of such size as to retain the grain on the screen and permit only the dirt and fine rubbish to pass through it, and is placed immediately below the outlet *O* and so as to receive the grain as it leaves the cylinder *C*, and is inclined
 80 downward so as to carry off the cleaned and clipped grain to a bin or other receptacle. Although by me called a "screen," this consists of a thin sheet of iron of perfectly smooth surface punched with small holes—say one eighth or more of an inch in diameter—at regular intervals, through which the air is exhausted downward by suction, and in operation holding the grain upon and over the
 90 holes in its downward course, rubbing off the dirt and small beards, which are immediately pulled through said holes by the suction and are dropped upon bed *B'* and passed off. It will be seen that in this operation the light grain is retained on the screen and passes off
 95 with the heavy grain, as no air-current is applied to it directly, so that it may be blown away and pass to the tailings or refuse and become lost, as in all other machines for this purpose now in use.

100 *B'* is a tight bottom or bed a few inches below the screen *A'*, which is supported above it in the same manner as the screen *A* is supported above the bottom or bed *B*. The bed *B'* does not extend the full length of screen *A'*,
 105 but at its lower extremity is opened to form a hopper or spout *H* to receive the fine dirt, clippings, and heavy foreign substances that are not otherwise removed and discharged, and discharge them into any proper receptacle.
 110 The screen *A'*, with bed *B'*, is attached to and actuated in a manner similar to that shown and described in reference to screen *A* and bed *B*.

115 *F*, Figs. 1 and 2, is an exhaust-fan inclosed in suitable case *G*, driven by belt from any convenient pulley, exhausting the air downward through the screen *A'* and the grain thereon, and carrying with the air so exhausted light offal, dirt, clippings, and other
 120 foreign substances that may be so carried from the space between the screen *A'* and bed *B'*, to which it is connected by a flexible spout, so that the vibrating or oscillating motion of the frame holding screen *A'* and bed *B'* may
 125 not be interfered with, and discharging into the open air or dust-room, as may be desirable.

130 *R*, Figs. 1, 5, and 6, is the scouring-reel, constructed of wood or metal, and consists of a series of arms or wings *v*, attached at right angles to an iron or wooden shaft *W* in any desired number and preferably of different

lengths, alternately, as shown in Fig. 5. To these arms or wings *v* are attached, parallel to shaft *W*, wooden or metal strips *U*. The reel *R* is inclosed in the cylindrical case *C*, formed by sections *C'* and *C''*, Fig. 1, and is to have a rotary motion by means of a pulley or other device. The greatest diameter of reel *R* is preferably about one-half inch less than the inside diameter of case formed of *C'* and *C''*, but this may be varied at will.

In operation the grain is admitted to screen *A*, through which it passes, thence through spout *S'*, through the reel-cylinder *C'* and *C''*, where it comes in contact with the revolving reel arms and blades *V* and *U* and is thrown by them against the stationary sides of the cylinder, is thoroughly rubbed together and against the arms and blades, and is discharged through spout *O* onto the screen *A'*, which removes all the loosened particles and undesirable substances, and the clean polished grain is discharged over the tail or end of screen *A'* into any desired spout or bin, and by such treatment the beards, rough projections, and dirt adhering to such grain are effectually removed and the grain polished and cleaned, and thus rendered more marketable.

Should it be desired to pass the grain through the cylinder without coming in contact with reel *R'*, that the grain may be screened, the section of case *C''* may be moved away from said reel *R* and the grain allowed to pass from bed *B* to screen *A'*, subjected only to the screening process and the action of the air exhausted through screen *A'* by exhaust-fan *F*.

Having thus described my invention, what I claim to be new, and desire to secure by Letters Patent, is—

1. In an apparatus for cleaning, scouring and clipping grain, the longitudinal movable section *C''* with the angular recess *O'*, to enlarge the inner side of discharging outlet *O*. at its lower edge, in combination with the fixed section *C'*, and the securing mechanism shown, to form a complete horizontal inclos-

ure for the scouring, clipping and cleaning reel *R*, substantially as shown and described, and for the purpose specified.

2. In an apparatus for cleaning, clipping and scouring grain, the exhaust fan *F*, so arranged that it will exhaust the air downward through the grain as it passes over a screen, *A'*, in combination with the screen *A'*, and bed *B'*, the grain being received from cylinder *C* upon the screen *A'*, said screen being of a width equal to the length of said cylinder *C*, and being composed of sheet iron perforated with round holes about one-sixteenth or one-eighth of an inch in diameter at regular intervals so as to retain the grain upon its upper surface, and causing the grain to be drawn up to and against said holes by suction, and held in its downward course, and to permit only the dirt and smaller particles to pass through it, substantially as shown, and for the purpose specified.

3. In an apparatus for scouring, clipping and cleaning grain, the exhaust fan *F*, in combination with the vibrating screen *A'*, the bed *B'*, suitable flexible air tight connection between said fan and bed and screen, and so arranged that the air may be exhausted downward through the screen *A*, and the grain thereon, substantially as described and for the purpose specified.

4. In an apparatus for cleaning clipping and scouring grain, the horizontal reel *R*, with longitudinal stirring bars parallel to its axis, in combination with the horizontal cylindrical case *C* with longitudinal receiving hopper *S'* and similar discharging outlet *O*, and screen *A'*, and bed *B'*, and exhaust fan *F*, and hopper spout *H*, so arranged as to feed the grain into the case *C* along its whole length and to scour or clip the grain by passing it directly around the cylinder from the hopper *S* to discharging outlet *O*, substantially as described and for the purpose specified.

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Witnesses:

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