

No. 658,700.

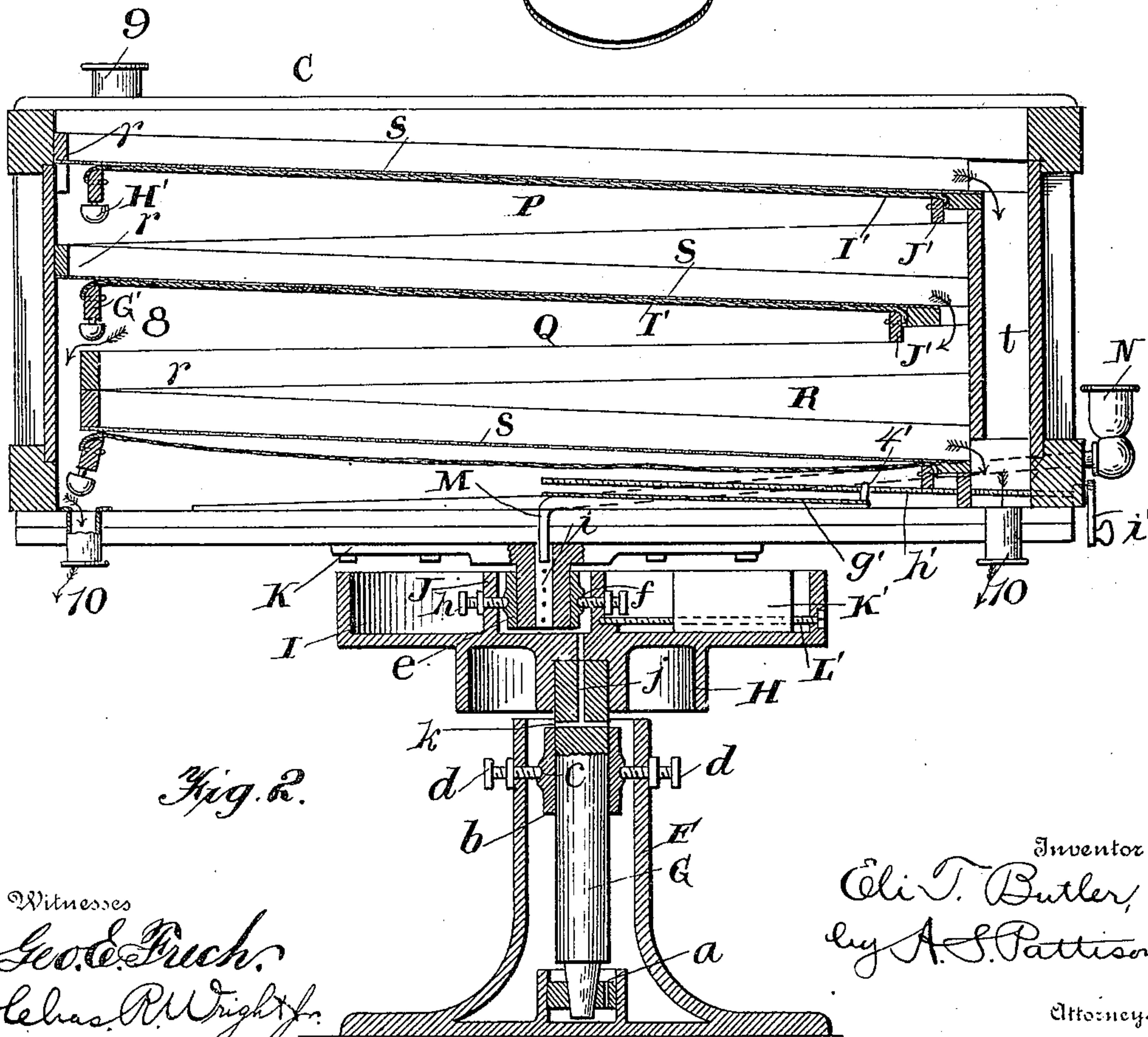
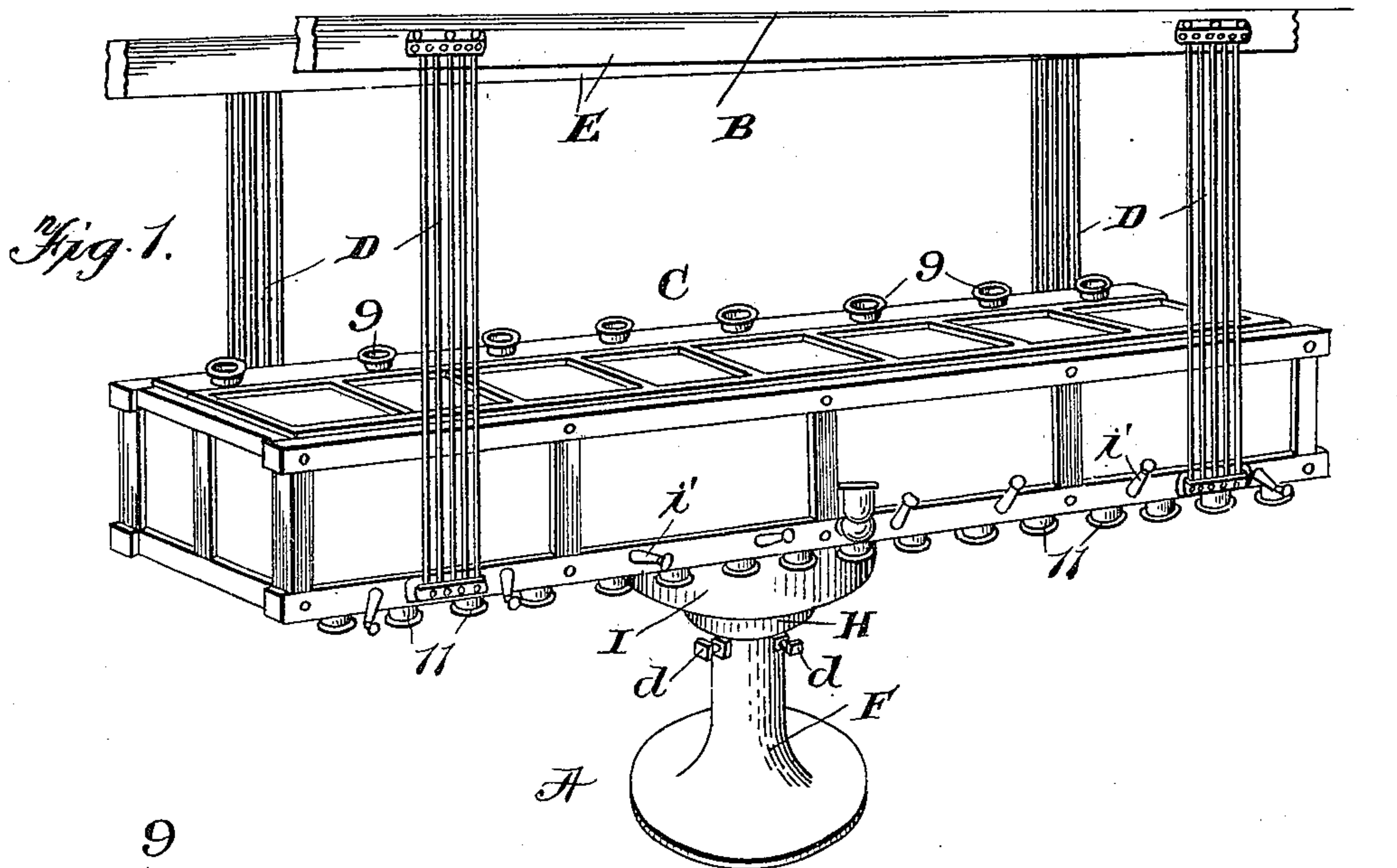
Patented Sept. 25, 1900.

E. T. BUTLER.
FLOUR BOLTER.

(Application filed Jan. 27, 1900.)

(No Model.)

3 Sheets—Sheet 1.



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3 Sheets—Sheet 3.

Fig. 5.

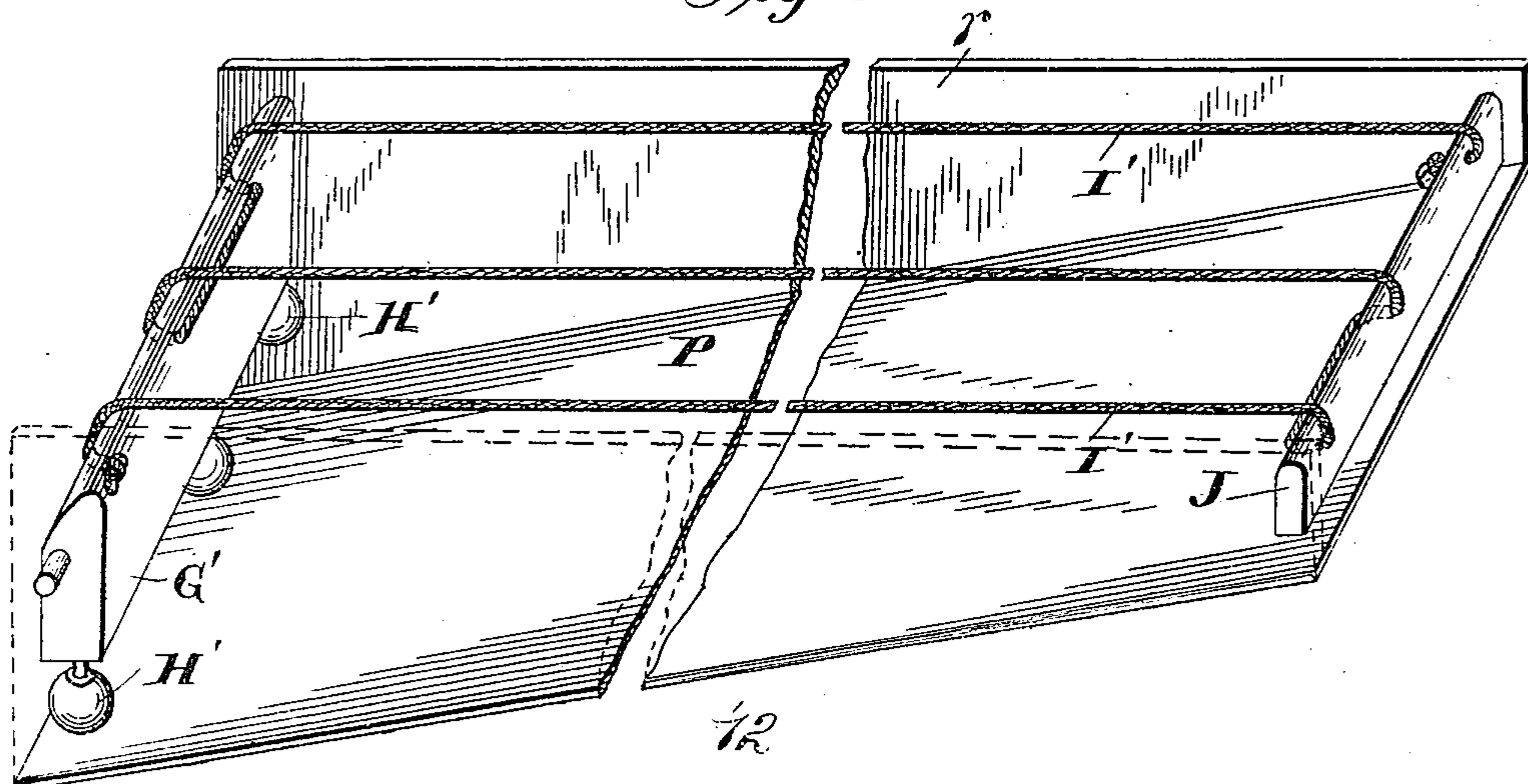


Fig. 6.

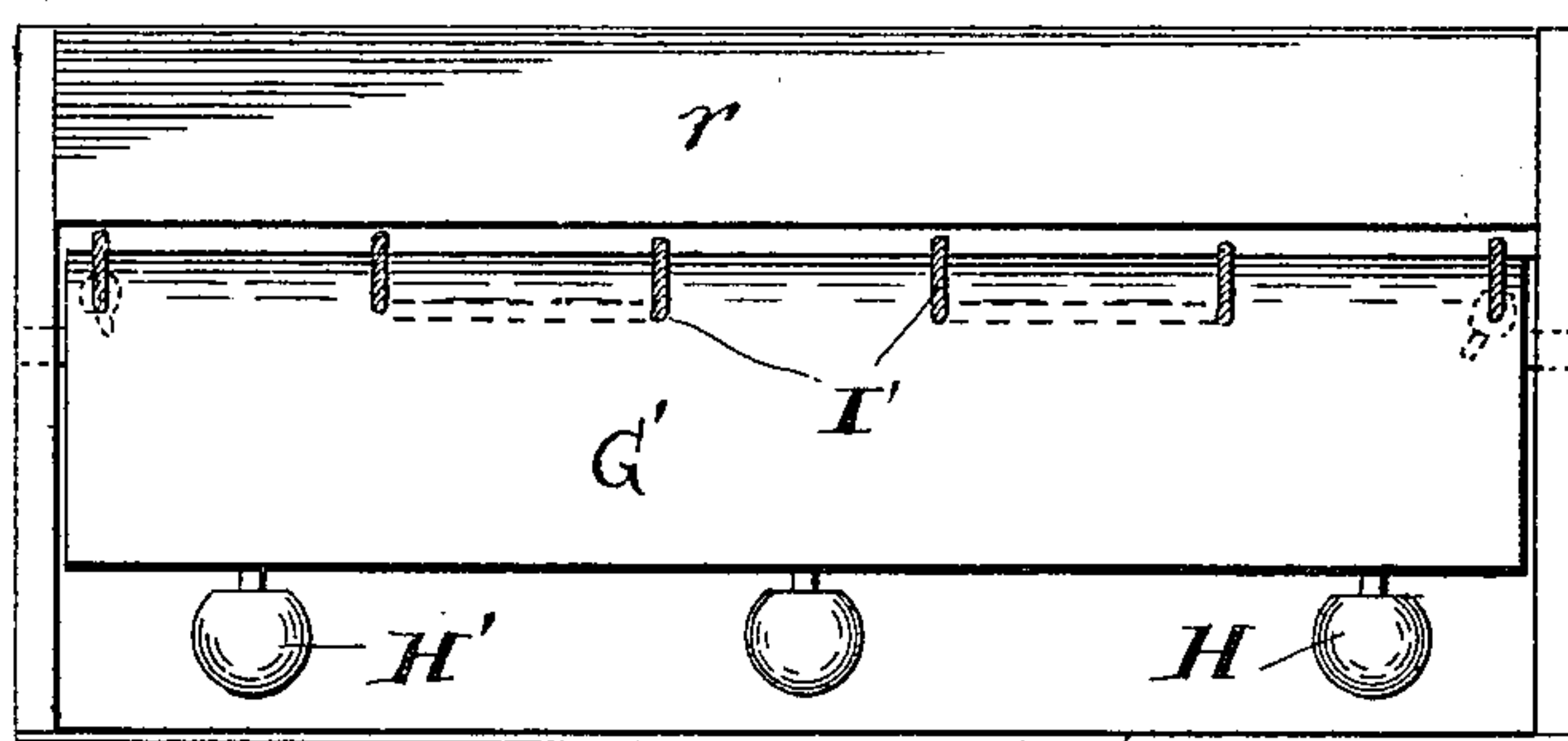
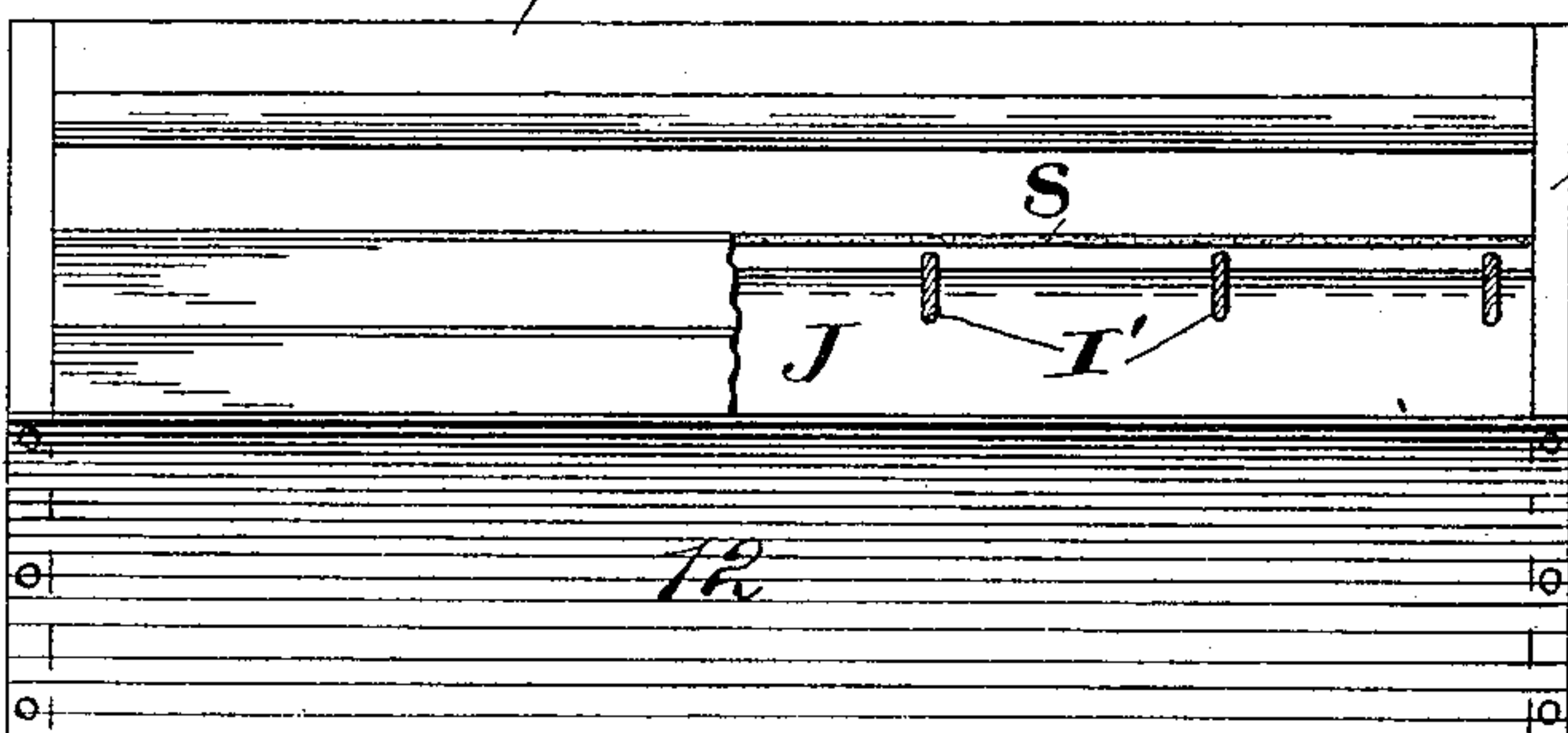


Fig. 7.



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UNITED STATES PATENT OFFICE.

ELI T. BUTLER, OF PHILADELPHIA, PENNSYLVANIA.

FLOUR-BOLTER.

SPECIFICATION forming part of Letters Patent No. 658,700, dated September 25, 1900.

Application filed January 27, 1900. Serial No. 3,007. (No model.)

To all whom it may concern:

Be it known that I, ELI T. BUTLER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Flour-Bolters, of which the following is a specification.

My invention relates to improvements in flour-bolters, and pertains to a bolter having the construction and arrangement of parts which will be fully described hereinafter, and particularly referred to in the claims.

The primary object of my invention is to provide an improved cloth-cleaner for bolters, the cleaning devices or mechanism adapted to be operated by the movement of the bolter-box, whereby the cleaner will work constantly as long as the machine is in operation.

The object of my invention also pertains to other details of construction, which will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a perspective view of a machine embodying my invention, the same being shown suspended in its operative position. Fig. 2 is a central transverse vertical sectional view of Fig. 1. Fig. 3 is a side elevation of the machine, the center portion of the box being broken away to exhibit an end view of the two central sections of the bolter-box. Fig. 4 is a vertical longitudinal sectional view of one of the cloth or sieve pans removed from the bolter-box, showing in dotted lines the operation of the cleaning mechanism or snapping-cords. Fig. 5 is an enlarged detached perspective view of one of the cloth or sieve pans, one side of the pan being removed. Fig. 6 is an end view of Fig. 4 looking toward that end containing the weighted cord-snapping members. Fig. 7 is a similar view looking at the opposite and outlet end of one of the cloth or sieve pans, the view being shown partly in section.

Referring now to the drawings, A indicates the floor, and B the ceiling, of a room or compartment in which the bolter is placed.

C is an elongated bolter-box which is sustained at the lower edge of each corner of the box by the plurality of vertically-suspending flexible rods D, which have their opposite and upper ends suitably connected to the

longitudinal beams E, the latter being connected with the ceiling of the room or with any other desired support. These suspending-rods D are preferably composed of suitable flexible wood rods, though they may be composed of other material without departing from the spirit and scope of my invention, as will be readily understood.

Resting upon the floor A of the building is a suitable standard F and connected therewith in any desired manner to make a firm attachment. This standard F is hollow, as shown in Fig. 2, and has a step-bearing *a* in its lower end to receive the lower end of a short vertical shaft G, which passes through the said standard F, with its upper end projecting thereabove. The upper end of this shaft G is provided with a suitable bearing socket or sleeve *b*, having a peripheral groove *c*, into which the inner ends of a suitable number of adjustable bearing bolts or screws *d* project. These bolts or screws *d* pass through the upper end of the standard F, near its upper end, and are made adjustable therein in the manner here shown or any other desired way for the purpose of properly centering the vertical shaft G. Connected with the upper and projecting end of the shaft G is a pulley H, which carries at its upper side a shallow cup-shaped member I. The pulley and the cup-shaped member are preferably cast integral, as here shown, though this may be varied, as will be readily understood, without departing in any manner from my invention. Projecting from the bottom of this cup-shaped member I is a vertical socket J, the said socket being arranged eccentrically to the axis of the pulley H and its shaft G. Secured to the underside of the center of the bolter-box C is a plate K, having a centrally-depending projection L extending within the said socket J and carrying a bearing-sleeve *e*, having a peripheral groove *f*, with which the inner ends of adjustable bearing bolts or screws *h* engage in the same manner as that described in respect to the shaft G. In this manner the depending projection L may be properly centered within the socket J.

In operation a belt is passed around the pulley H from any desired power and the pulley and its attachment revolved, which, owing to

the eccentric position of the socket J, in which the depending projection L, carried by the under side of the bolter-box, is journaled, gives to the bolter-box a gyratory motion.

5 For the purpose of supplying oil to the bearings a pipe M passes through the bolter-box C and has at its outer projecting end an oil-cup N, the inner end of the said pipe extending into and communicating with a vertical
10 passage-way *i*, formed through the depending projection L, and thus establishing communication with the bearing of said projection. Communication is established to the bearing at the upper end of the shaft G, and
15 consequently to the step-bearing at the lower end thereof, by means of a vertical passage-way *j* through the pulley H, the said vertical passage-way communicating at its lower ends with laterally-extending passage-ways *k*,
20 formed in the upper end of the shaft G, and the oil by centrifugal and capillary action will find its way to and lubricate the bearing *e*. In this way oil is fed to all of the bearings of the driving mechanism of the bolter.

25 Situated within the bolter-box C are a series of horizontal and transversely-arranged sieve or cloth pan sections 1, 2, 3, 4, 5, and 6, (see Fig. 3,) and each of these said transversely-arranged sections of cloth or sieve
30 pans is composed of a plurality of vertically-arranged cloth or sieve pans P, Q, and R. These sieve or cloth pans are preferably separate and are adapted to be readily removed and inserted within the bolter-box C, the said
35 bolter-box being divided into the several sections 1, 2, 3, 4, 5, and 6 by vertically and transversely arranged partitions A', B', C', D', and E', making five partitions and dividing the bolter-box into six transversely-arranged
40 chambers to receive the sections of sieve or cloth pans. The number of sections can of course be varied, as will be readily understood, without in any manner departing from the spirit of my invention. Each of these sieve-
45 pans consists of a rectangular frame *r*, carrying an inclined sieve or cloth *s*, and all of the sieves or cloths of the pans of the several sections are preferably arranged to decline in the same direction, or, in other words, toward the
50 same side of the bolter-box C. These frames or pans are of a length less than the width of the bolter-box C for the purpose of forming at one side of the box C the tailings chamber or space *t* and at the opposite side the flour
55 space or chamber 8, said tailings and flour spaces or chambers being vertically arranged at the respective ends of the sieve or cloth pans and communicating with the bottom of the bolter-box C. At the inlet side of
60 the bolter-box it is provided with the inlet openings 9, communicating with the inlet ends of the sieve pans or cloths, and through which the material to be bolted is passed, and both edges or sides of the bottom of the
65 bolter-box C are provided with the exit pas-

sages or openings 10 and 11. The openings 11 communicate with the tailings passage-way or chamber *t*, and the openings 10 communicate, respectively, with the flour passage-ways or chambers 8, whereby the flour which
70 has been bolted and the resulting tailings are kept separate, as will be readily understood.

As before stated, the cloth or sieve pans consist of the rectangular frames *r*, and these frames have tin or other suitable inclined
75 bottoms 12, which incline in the opposite direction to the inclination of the cloths or sieves, as is well understood by those skilled in the art.

The essential feature of my present inven-
80 tion pertains to the cleaning mechanism, which I will now explain. Pivoted intermediate its edges to one end of the sieve or cloth pans (preferably the inlet ends) are the
85 snapper-cords operating members G', which extend entirely across the end of the pans and have connected to their lower edges a suitable number of weights H', whereby the
90 actuating members G' are weighted at their lower edges and adapted, therefore, to be oscillated upon their axis by the gyratory motion of the bolter-box, as will be readily understood. The snapper or cleaning cords,
95 wires, or silks I' have one end connected with the upper edge of the actuating members G', and these cords are preferably passed through holes in a transversely-arranged stationary
100 bar J' at the opposite end of the pan and are made continuous by loosely passing there-through and carried backward to the opposite end of the pan and through the actuating member, thereby easily allowing a self-adjustment or tension of the cords throughout each of the pans. This insures a uniform
105 tension throughout all of the snapping cords, silks, or wires of each of the sieves or cloths, as will be readily understood, and which is a very desirable feature. By reference to Fig. 4 the operation of these snapper-cords for
110 the purpose of cleaning the sieves or cloths will be readily understood.

As the bolter-box is given the gyratory motion in the manner before described the weighted actuated members G' will cause the
115 movement of the snapper-cords, silks, or wires, as indicated in dotted and solid lines, Fig. 4, thus knocking or rapping the sieve or cloth, and thus serving to clean it, which is readily understood by those skilled in the art and
120 need not be further and more specifically explained.

For the purpose of properly balancing the pulley H and the cup-shaped member I, attached thereto, an adjustable weight K' is
125 situated therein, the said weight resting upon the bottom of the cup-shaped member, and an adjusting screw-rod L' passes through the said weight from the outer edge of the member I for the purpose of moving the weight
130 therein, and thus accomplishing a perfect bal-

ance of the driving mechanism, the inner end of the adjusting-rod L' being seated in the socket J, as clearly illustrated in Fig. 2.

Situated at the bottom of each of the transversely-arranged sections of sieve-pans is a sheet-metal cut-off slide g' , movable in grooves in the sides of the lower pans, and passing from the outside of the bolter-box C are the screw-rods h' , having at their outer ends the operating-handles i' , by means of which they are readily rotated. These screw-rods pass through the threaded sockets $4'$, which project from the centers of the sheet-metal slides g' , and by means of which they are adapted to serve as cut-offs, as will be readily understood.

I am aware that it is not new to provide snapper-cords for the purpose of cleaning a bolter sieve or cloth; but so far as I know these snapper-cords have not been provided with actuating members constructed and arranged as herein shown and described, whereby the snapper-cords are automatically operated by the motion of the bolter-box independent of any positive actuating member or members.

Attention is directed to the fact that the pivotal points w of the oscillating board G' are situated outside of a vertical line drawn through the center of the said board, whereby greater efficiency in the operation of the device is accomplished, in that the placing of the pivot as shown causes a sudden lifting action upon the cords, which increases their efficiency.

By reference to Fig. 2 it will be noted that the bottom M' of the several chambers is inclined toward opposite sides—that is, said bottom is made thickest or highest in the center. When the cut-off slide g' is moved inward as far as the threaded rod will permit, then the product of the lower sieve all goes to finished flour. When, however, the slide is drawn outward in the position shown in Fig. 2, one-half of the sieve is cut off, the product from that part of the sieve to be treated in the next section in order or in a special section for that purpose. This slide is an important feature, as the material is deprived of its flour as it advances from an upper to a lower sieve, and the deleterious matter, which has been floating upon the sieve, because it is lighter or because of being a comparatively-thick layer of flour particles, now moves so close to the silk sieve that some will drop through, consequently specking the resultant flour, and hence the function of the slide in cutting it off from the finished product.

As shown by arrows in Fig. 2, the tailings of two sieves in operation pass down to the bottom of the box.

From the above description and the accompanying drawings it will be noted that all of the sieves are inclined in one direction and that beneath the sieves there are pans adapted to carry the flour and scalped material where

desired. It will also be noted that I have provided a very efficient and improved mechanism for cleaning the sieves by means of the cords hereinbefore explained.

I do not limit myself to the exact arrangement of the pans between the sieves, for these can be readily varied by those skilled in the art for the purpose of adapting the invention for use upon middlings or for use in a wheat-break, in which event, as is well understood by those skilled in the art, it would be necessary to provide one or more of the sieves with silk of different meshes, whereby a part of the material would pass through the upper sieve to the one below, while another portion of the material passing through the sieve would be passed out into the flour-receiving space or chamber. These variations are well understood and can be readily made by those who are skilled in the art of milling and do not need to be here further shown or described. It will be readily understood also that in a machine constructed as here shown and described, where there are several separate sections in the bolting-box, one section can be arranged and constructed as a wheat-break section and another as a middlings-section and each of the sections varied according to the work it is intended for them to perform; but in either event the sieves will all incline in the same direction, and in either event there will be provided a slide for cutting off the lower sieve, and this slide will be at either side, as may be desired, according to whether the particular section is a wheat-break section or a middlings-section, as is well understood by those skilled in the art.

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

1. A bolter comprising a movable member carrying a sieve, means for moving the said member, a weighted vibratory member carried by the movable sieve member, and a snapper-cord connected at one end to one side of the sieve member and connected at its opposite end to the said weighted vibratory member, whereby the movement of the sieve member causes an alternate tightening and slackening of the said snapper-cord through the vibration of the weighted member, substantially as described.

2. A bolter comprising a movable sieve member carrying a sieve, a vibrating member pivoted between its upper and lower edges and carried by the sieve member, the said vibratory member being weighted at one side of its pivotal point, a snapper-cord connected to the weighted member at the opposite side of the pivotal point, the opposite end of the snapper-cord being connected to the opposite end of the sieve member, the parts adapted to operate as described.

3. A bolter comprising a movable box, means for actuating the same, a cloth or sieve

carried by the said box, a weighted snapper-cord-actuating device pivoted between its upper and lower edges extending across the sieve or cloth, and a cord passing back and forth
5 from end to end of the cloth or sieve and connected with one end of the cord-actuating member, constituting a plurality of snapper-cords, whereby the cords are automatically operated for cleaning the sieve or cloth by

the movement of the bolter-box, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ELI T. BUTLER.

Witnesses:

CHAS. W. DE MASS,
WM. I. MAUDE.