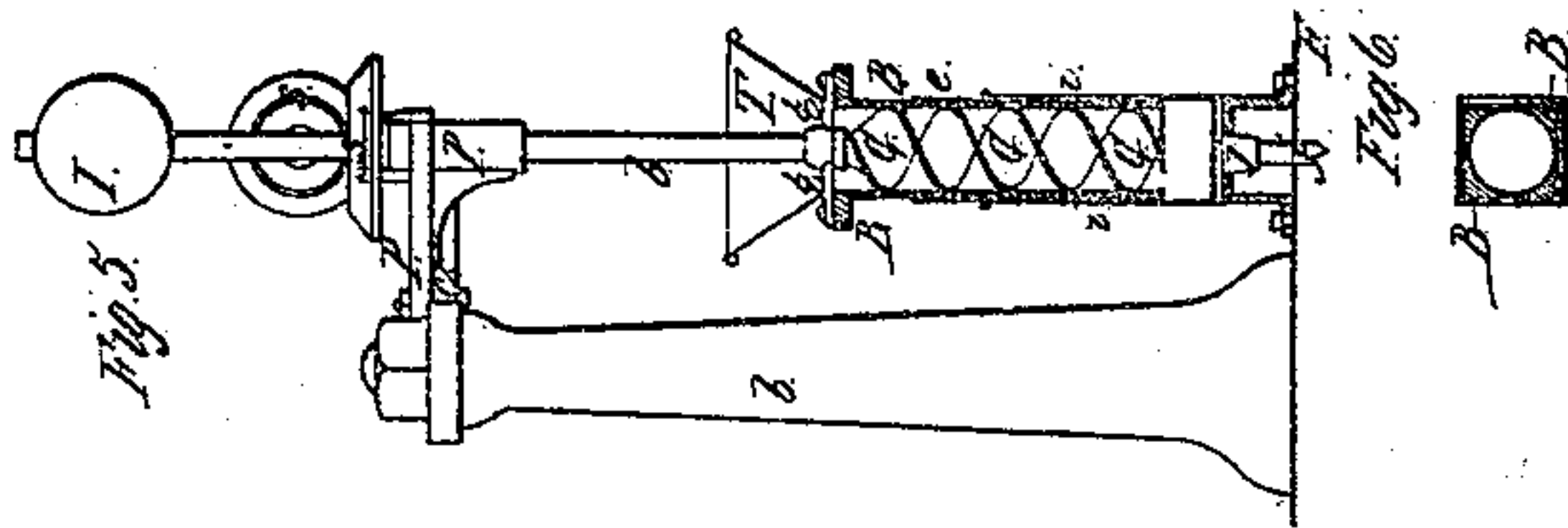
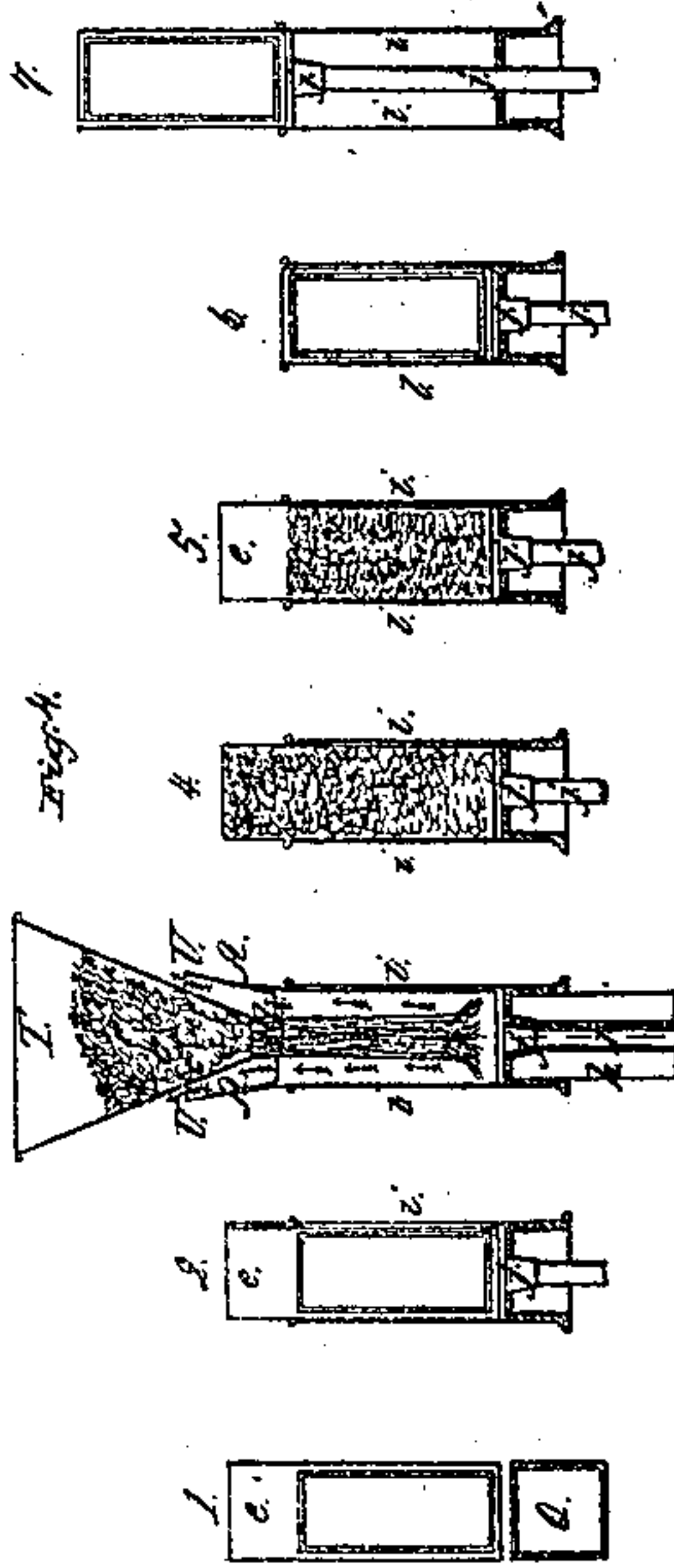
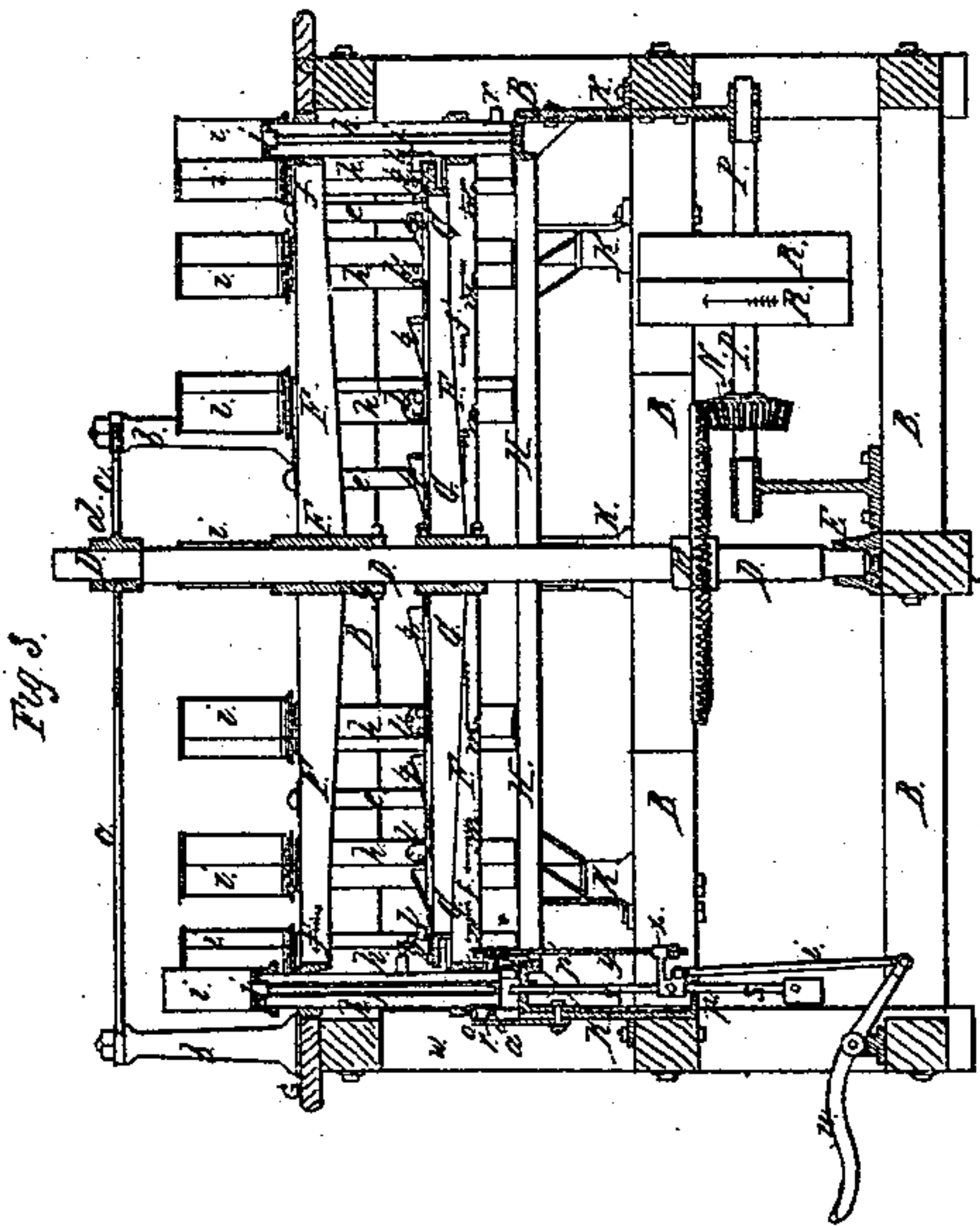


*I. A. Brownell,*

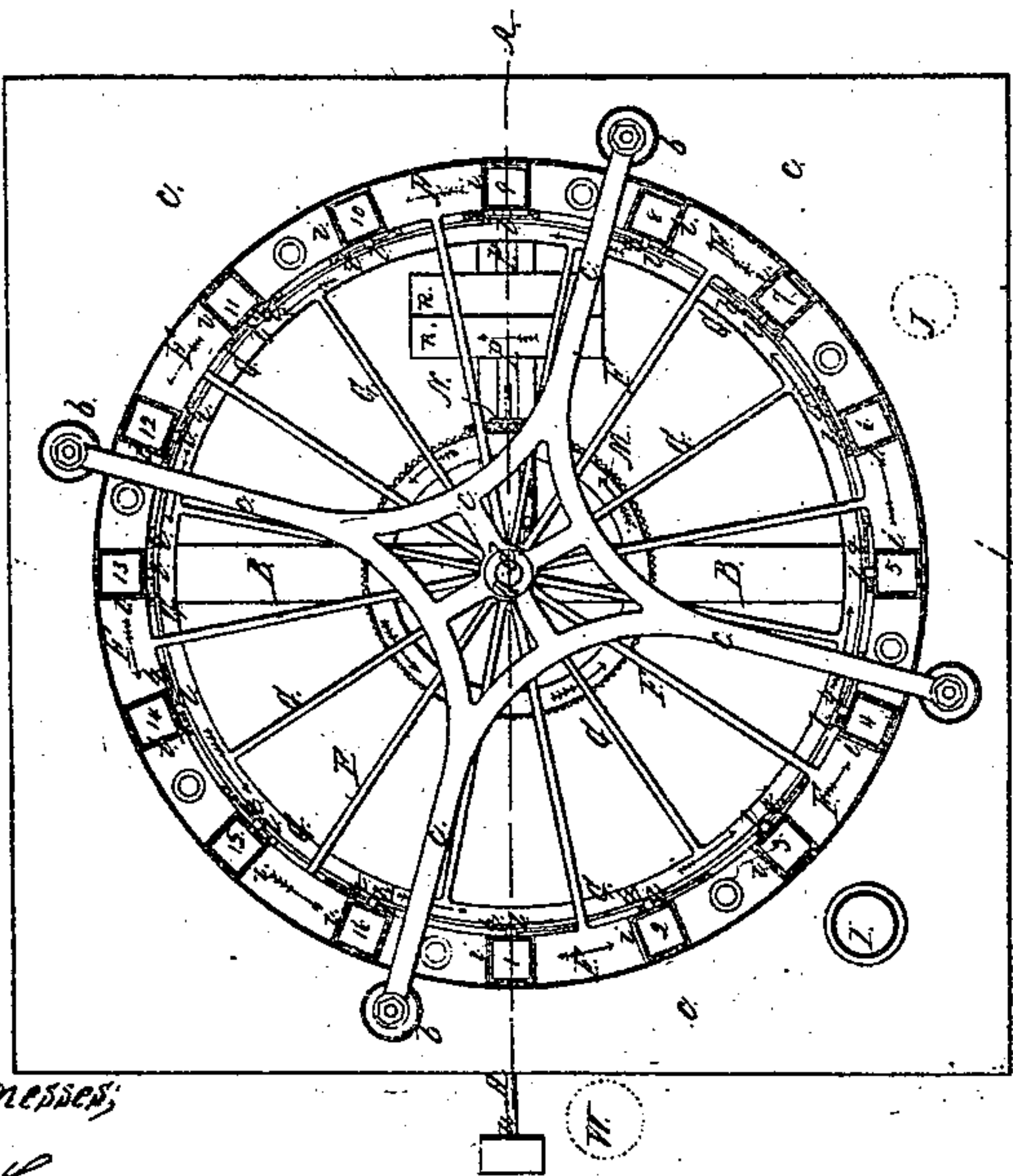
*Flour Packer.*

*N<sup>o</sup> 26,084.*

*Patented Nov. 15, 1859.*

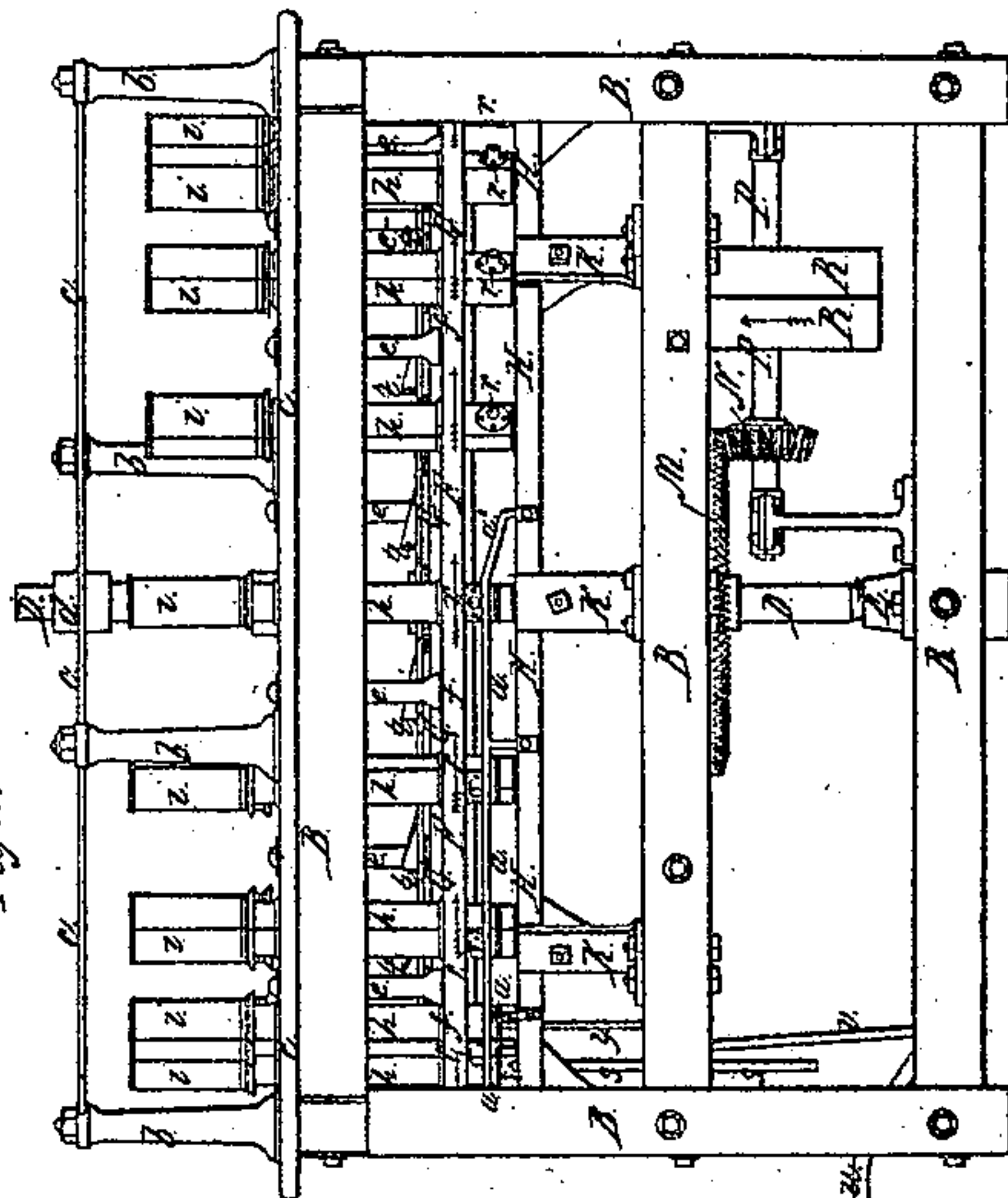


*Fig. 1.*



*Witnesses;*  
*W. H. Green,*  
*A. S. O'Brien.*

*Fig. 2.*



*Inventor;*  
*Isaac A. Brownell*



# UNITED STATES PATENT OFFICE.

ISAAC A. BROWNELL, OF PROVIDENCE, RHODE ISLAND.

## MACHINE FOR PACKING STARCH, &c.

Specification of Letters Patent No. 26,084, dated November 15, 1859.

*To all whom it may concern:*

Be it known that I, ISAAC A. BROWNELL, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Machinery for Packing in Bundles or Packages Commodities of the Nature of Starch, Saleratus, Farina, &c.; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a plan of the machine. Fig. 2, is a side elevation of the same. Fig. 3, is a section through the line A, A of Fig. 1. Fig. 4, Nos. 1, 2, 3, 4, 5, 6, 7, represent the different stages of the operation.

Similar letters refer to like parts in the different figures.

B, B, is the frame of the machine of wood surmounted by a table C, also of wood, from which ascend the columns *b, b, b, b*, of cast iron which form a support for the spider *c, c*, which is secured to the columns in its proper position by bolts passing through the same into the frame. The hub *d*, of this spider forms the upper bearing for the vertical shaft D, which has a bearing also at the bottom in the step E.

Uppermost upon the shaft is the wheel F, having two rims *f, f'*, fastened together by the studs *e, e, e*, &c, and suitable bolts passing through the same, or in any other convenient manner. This wheel turns loosely upon the vertical shaft, and is held in its proper position thereon by the collar *g*. In the rims of this wheel are formed apertures of corresponding size and form (square) sixteen in number, (though more or less may be employed according to the size of the machine or its capacity,) in which slide suitable square blocks of, from two to three inches diameter by eighteen (18) inches long of wood *h, h*, on the top of which are placed the cans *i, i, i* &c. formed of sheet iron and firmly riveted to the casting at the base which takes in the top of the block and is firmly secured thereon by screws or otherwise.

Within the can is a plate of metal *j*, to which is attached the rod *j*, extending downward inside the block which is formed to receive it (as shown in Fig. 3) this plate is made to slide within the can vertically for

purposes hereinafter explained. The blocks are shod at the bottom with a plate of hammered leather or hide to prevent splitting. Attached to the blocks also are two studs *l, l*, &c, *r, r*, &c one *l, l*, upon the inside midway between the two rims of the wheel F, and the other upon the outside near the bottom (*r, r* &c) these are cut into the wood and secured by screws. Lower down upon the shaft (D) is secured the cam-wheel G, which is made fast to the shaft by set screws in the hub. Upon the periphery of this wheel are secured cams or wedges *t, t, t* &c, sixteen in number (or one to each block). These by the revolving of the wheel are made to lift the blocks, (by passing beneath the studs *l, l*, &c.) to a proper height and drop the same in a continuous motion. They are so arranged upon the wheel with relation to each other, as to render the resistance caused by friction upon their surface, equal during the entire revolution. This is accomplished by varying the position of each one additional sixteenth from the preceding one from sixteen equal divisions of the wheel's rim (or circumference).

H, H, is a ring of cast iron secured by the feet K, K, &c to the frame by suitable bolts as shown, this ring is turned smooth upon its upper surface and serves as a solid foundation or table for the continuous hammering of the blocks. Secured upon the outer edge of the ring is a rail *a, a*, extending around the same a little more than a quarter of the circumference and terminating at each end at *a', a'*, in an inclined plane. The studs *r, r*, &c in their turn ride up the inclined end of this rail at *a'* and in so doing lift the inner studs *l, l*, &c from contact with the cams thereby depriving the blocks of their jolting motion. Five blocks remain at rest in this way, at one time, during which one bundle is withdrawn from the can, an empty bag inserted in its place, and an additional portion of the commodity supplied to the bag in the can which is about to descend from the rail at *a'*, to take its place with those in motion.

Through the ring H, and directly beneath the center of block No. 1, is a rod or punch S. This moves vertically in guides at *p, p*, and is connected with the foot-lever *u*, by the rod *v*, at the lower end of the punch is fastened a weight, that it may quickly and surely descend when released by



the foot of the operator. Attached to the rod S is the hub  $x$  which slides loosely upon the rod  $y$ , which is provided at the bottom with a nut and a washer of leather. Upon the outside of this ring is the stop  $o$ , secured in its proper position (as shown in Fig. 3) the studs  $r$ ,  $r$  &c stop directly beneath the projecting top of the same, thereby preventing the blocks from rising while the completed bundles are being forced from the can.

Opposite upon the inside edge of the ring is secured a casting in which is formed a barrel or recess for a spiral spring acting upon the latch or pawl  $w$ , pressing the same upward against the lower rib  $m$ , or upon the rim  $f'$  of wheel F, and into the notches cut therein opposite the centers of the blocks, and by means of which the wheel is prevented from turning, while the commodity is being introduced; and the completed bundle is being withdrawn from the cans. It is released when desired, by lifting the end of the lever  $u$ , with the foot.

Motion is communicated to the shafts D, through the medium of the bevel wheels M and N, the shaft P and the pulleys R, R.

The commodity is supplied to the bags through the tunnel T, (Figs. 4, No. 3) which is so constructed that the commodity will readily discharge itself into the bag in a stream or jet (from the nozzle Z, at the bottom), of about one-third ( $\frac{1}{3}$ ) the diameter of the bag. Upon the outside is a nozzle  $a$  A which fills the entire mouth of the bag and is secured to the outside of the tunnel by the ring V, which is pierced with holes to furnish an escape for the air while the commodity is being introduced, (as shown by the arrows in the figure).

Operation: In Fig. 1, an operative stands at the position indicated by W, and one also at V. I, is a pot of glue for sealing the packages. J, represents the scale for weighing the commodity. The machine is set in motion and the revolving cam-wheel is continually jolting eleven of the cans (occupying the position of numbers 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16,) while five (in the position of numbers 1, 2, 3, 4, 5, remain at rest. The wheel F, remains stationary with the shaft D, turning in its hub. W, places a bag in can No. 1 and raises with his foot the lever  $u$ , when, the weight of the blocks acting as a resistance upon the face of the cams, the motion of the cam wheel is communicated, by the friction thus created, to the wheel F, which brings can No. 2 up to receive an empty bag, Fig. 4, No. 2. This operation is repeated until can No. 1, stands opposite operative V, in the position of Fig. 5, Fig. 1, who having weighed the proper portion of the commodity fills the same into the bag through the tunnel—as shown in Fig. 4, No. 3, which is discharged into

the center of the bottom of the bag and slides each way against the sides thereof and in so filling gradually expels the air which escapes (in the direction shown by the arrows) between the inside nozzle Z, and the outside nozzle A, through perforations in the ring at the top of the latter. The tunnel is then removed (Fig. 4, No. 4), the wheel F is released and the block slides down the incline at  $a^2$ , and takes its place at No. 6, another bag is supplied by W, and another quantity is weighed and filled into can No. 2 by V, during which time the cam wheel has made one and a half ( $1\frac{1}{2}$ ) revolutions thereby giving can No. 1 twenty-four (24) jolts or drops. Can No. 2 is now set in motion and the operation continues until can No. 1 arrives opposite operative W. It has at this stage received  $24 \times 11 = 264$ , two hundred and sixty-four successive jolts or drops, and is reduced in bulk (as shown in Fig. 4, No. 5). The end  $e$  of the bag is then folded by V, glue applied and a square piece of paper or label Q (Fig. 4 No. 1) is pressed upon the end of the bundle, when the latter presents the appearance as is represented in Fig. 4 No. 6. Operative V, then steps upon the lever  $u$ , when the punch S, is forced up against the rod  $j$ , thereby forcing the completed bundle from the can (Fig. 4 No. 7). The foot is then suddenly removed from the lever ( $u$ ) when the punch (S) descends with sufficient force to jerk the pawl  $w$  from the notch in the rim of the wheel F, through the medium of the rod  $y$ , and the hub  $x$ , thereby liberating the wheel and causing can No. 2, to assume the position and to be similarly operated upon with the preceding one. Thus the operation continues—the part to be performed by hand being about equally divided between the two operatives.

I do not claim broadly a tunnel with a surrounding air escape applied to the nozzle, but restrict myself to a tunnel of such construction as an auxiliary device requisite to the successful performance of the other operations of my machine.

I claim—

1. The tunnel T, as constructed for the purpose substantially as herein above described.

2. I claim attaching the cans  $i$ ,  $i$  to upright strips of wood or metal which receive, and transmit to the said cans the motions which reduce in bulk the commodity placed therein.

3. I claim the wheel F or its equivalent for holding and carrying the blocks  $h$ ,  $h$ , in combination with the cam-wheel G or its equivalent and the studs  $l$ ,  $l$ , &c. for imparting the motions which reduce the commodity in bulk, and also the intermitting rotary motion to the wheel F, for the purpose set forth.

4. I claim the arrangement of the foot

lever *u*, the rod *v*, and the punch *S*, with the rod and plate *j*, for the purpose specified. I also claim in combination with the punch *S*, the pawl *w*, rod *y* and sliding hub *x* for  
5 liberating the wheel *F*, at the proper time.  
5. I claim the rail *a*, *a*, and the studs *r*, *r*, &c. with the stop *o*, for withholding

motion in the manner and for the purpose specified.

ISAAC A. BROWNELL.

Witnesses:

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W. OSBORN.