

(No Model.)

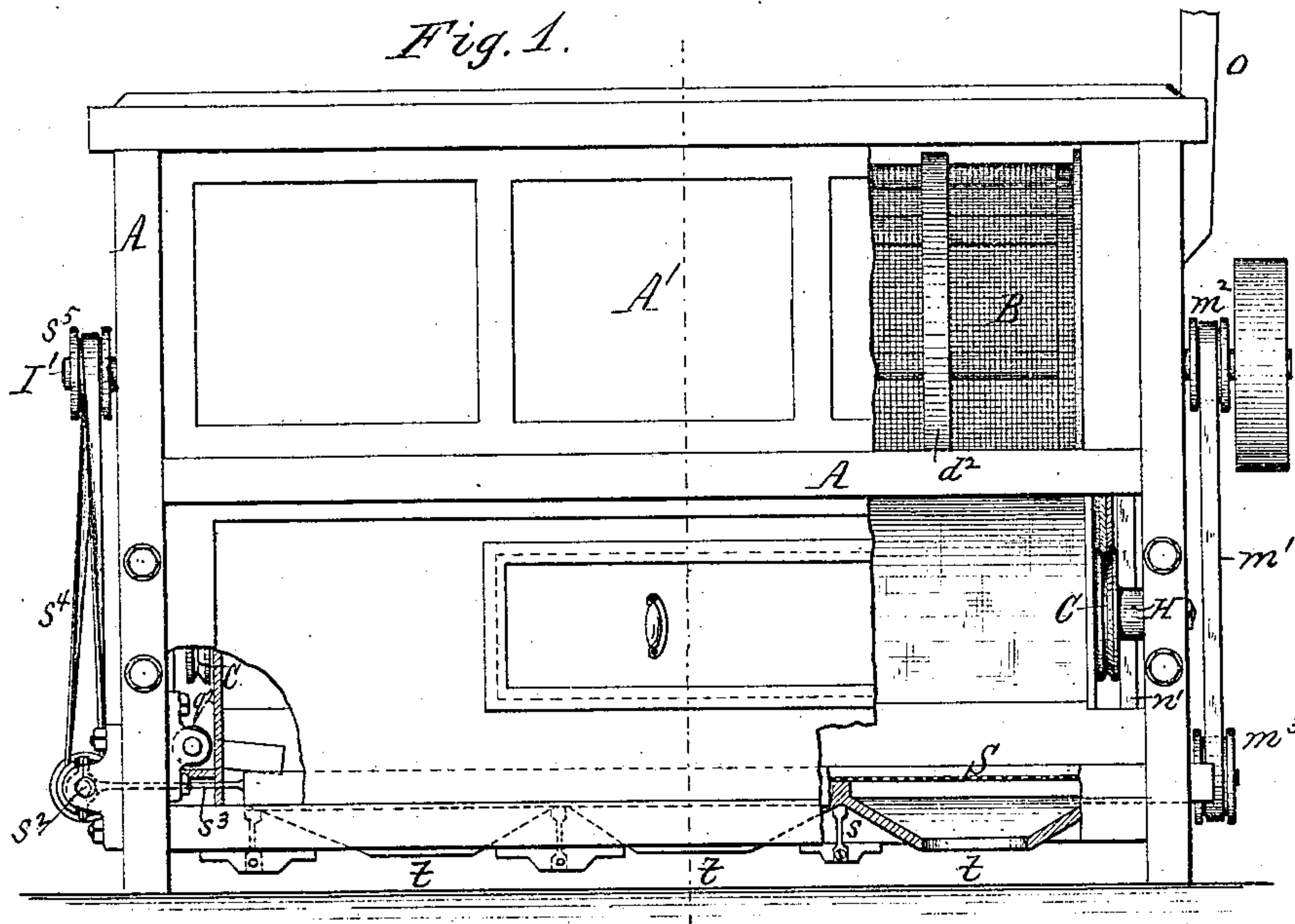
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J. NICHT.  
FLOUR BOLT.

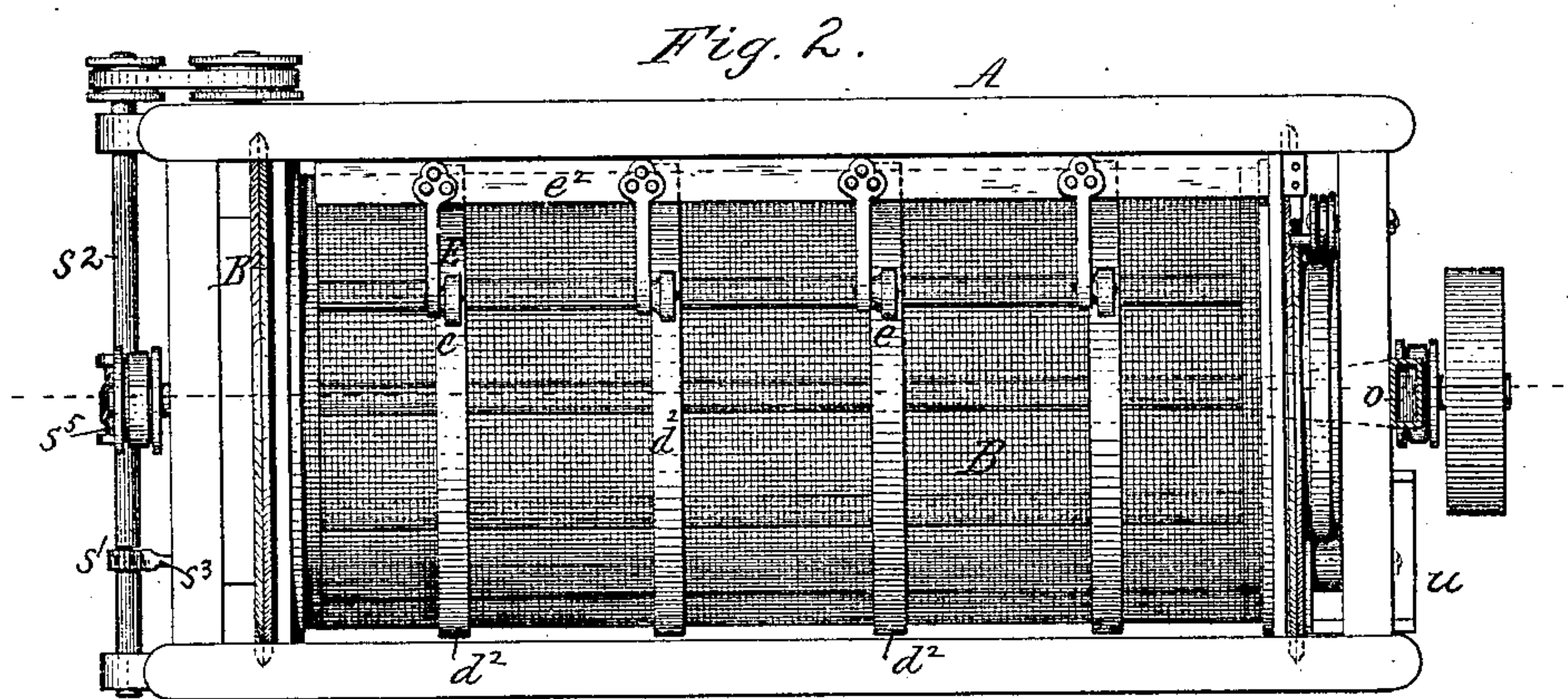
No. 250,952.

Patented Dec. 13, 1881.

*Fig. 1.*



*Fig. 2.*



Witnesses:  
Chas. J. Buchheit  
Edw. J. Brady

J. Nicht Inventor.  
By Wilhelm H. Bonner  
Attorneys.

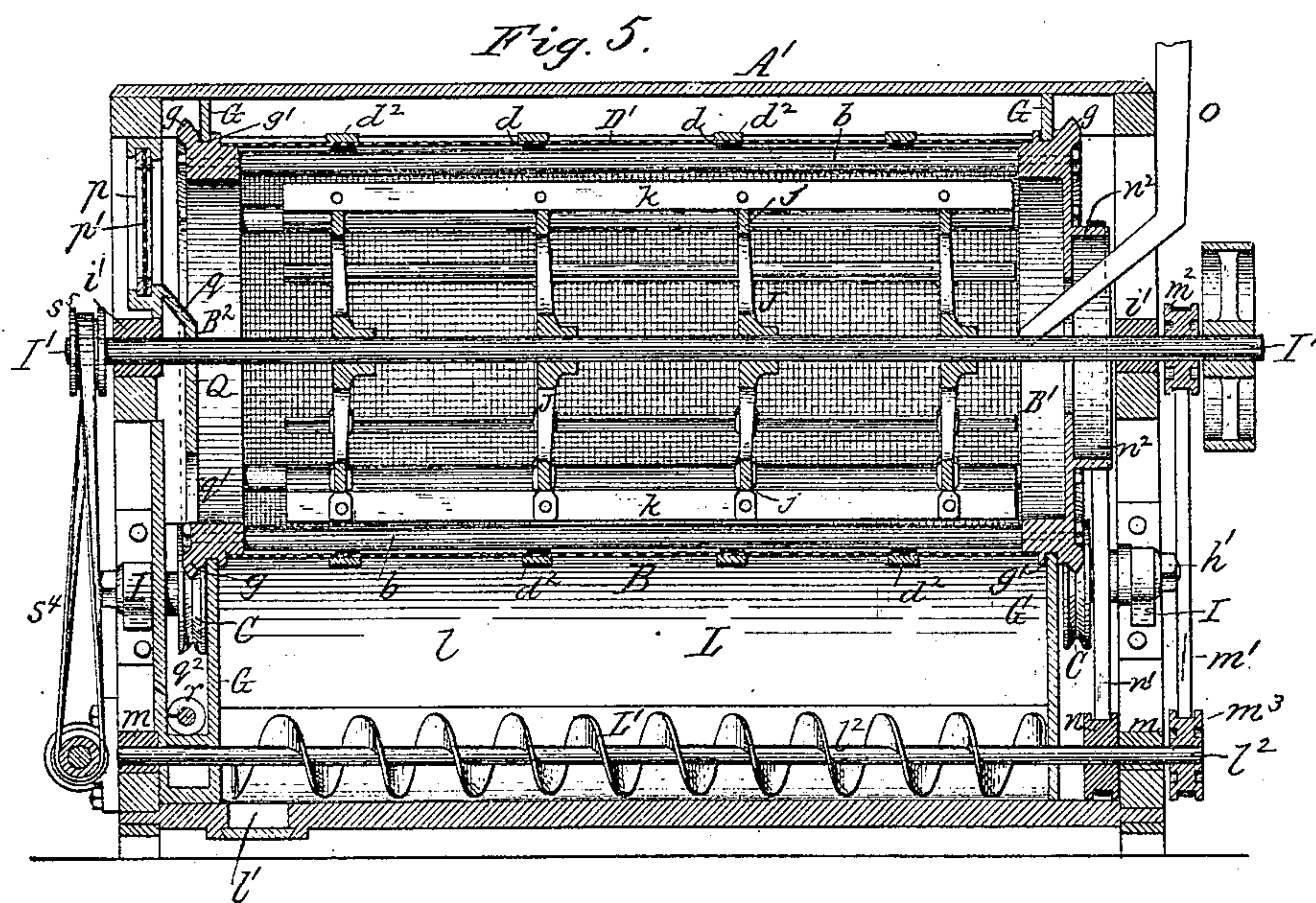
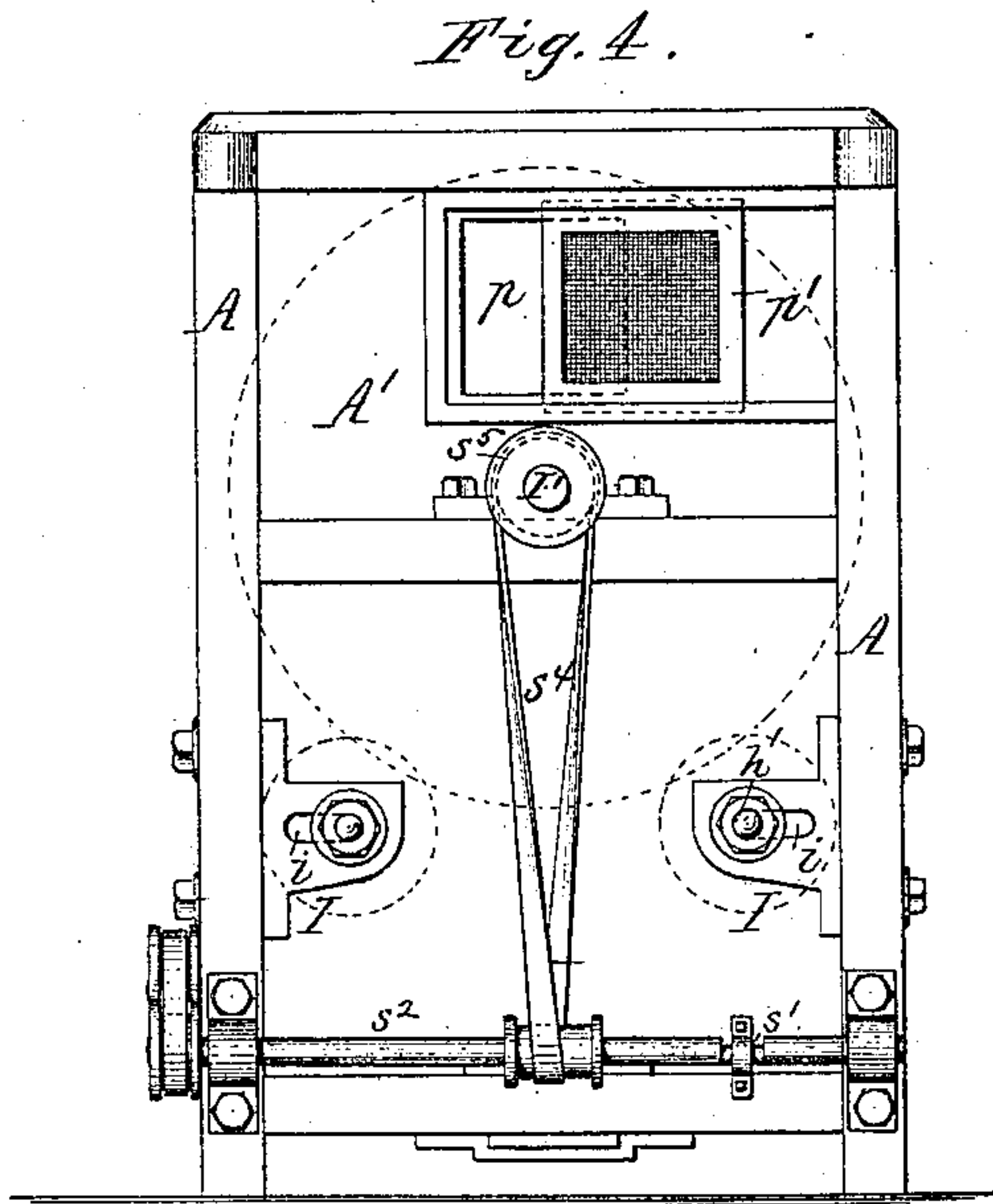
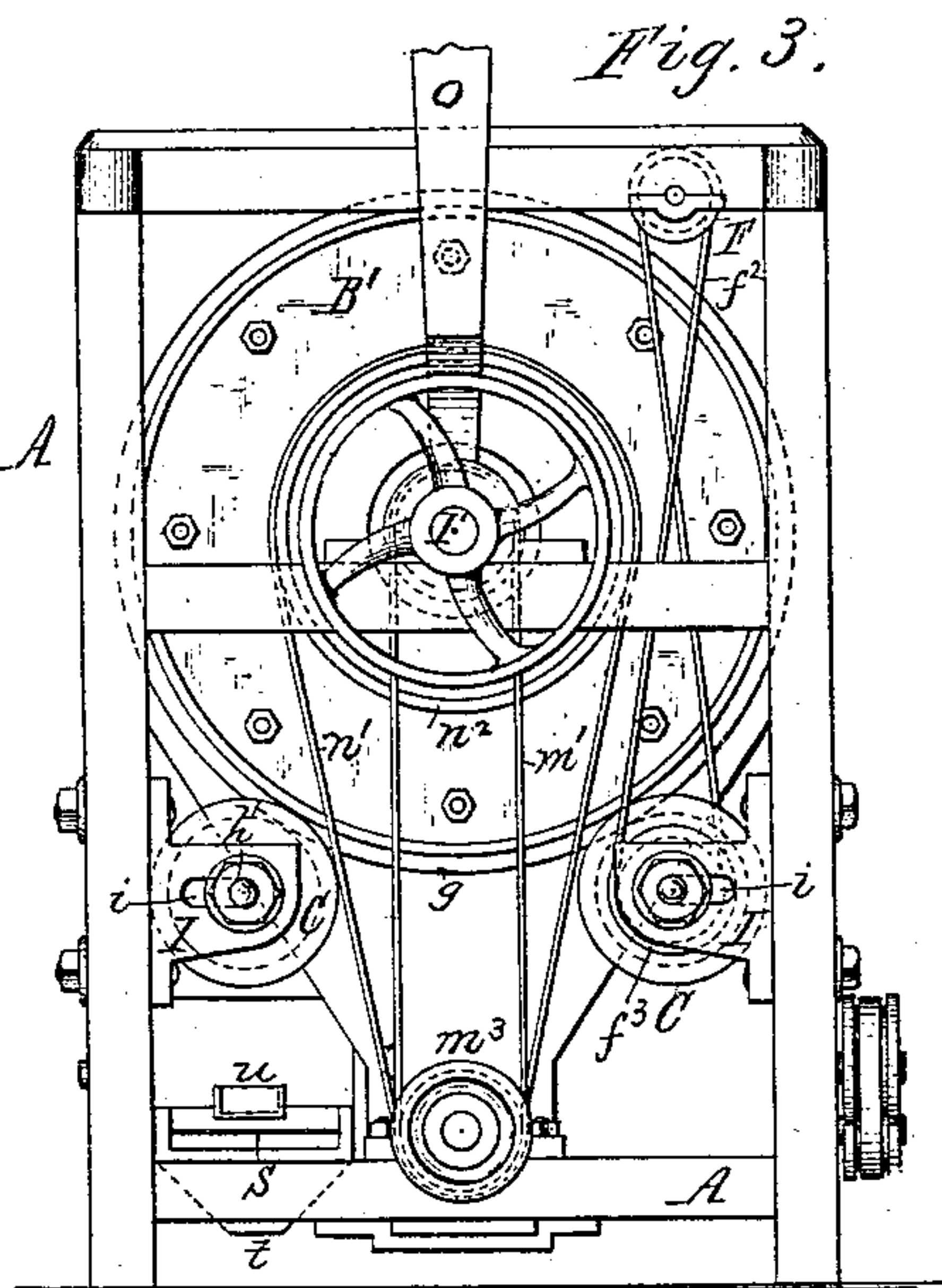
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3 Sheets—Sheet 2.

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3 Sheets—Sheet 3.

J. NICHT.  
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*Fig. 6.*

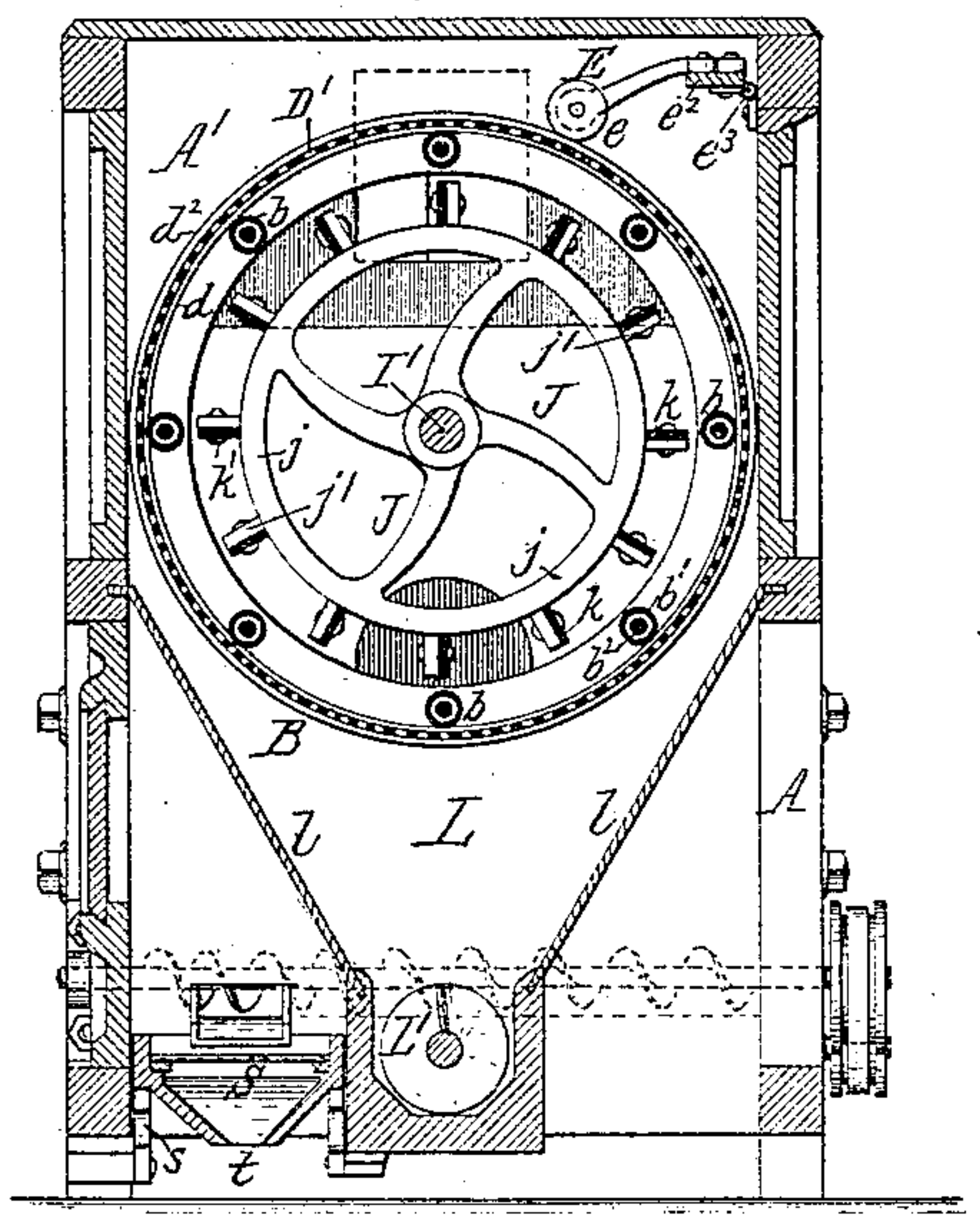


Fig. 7.

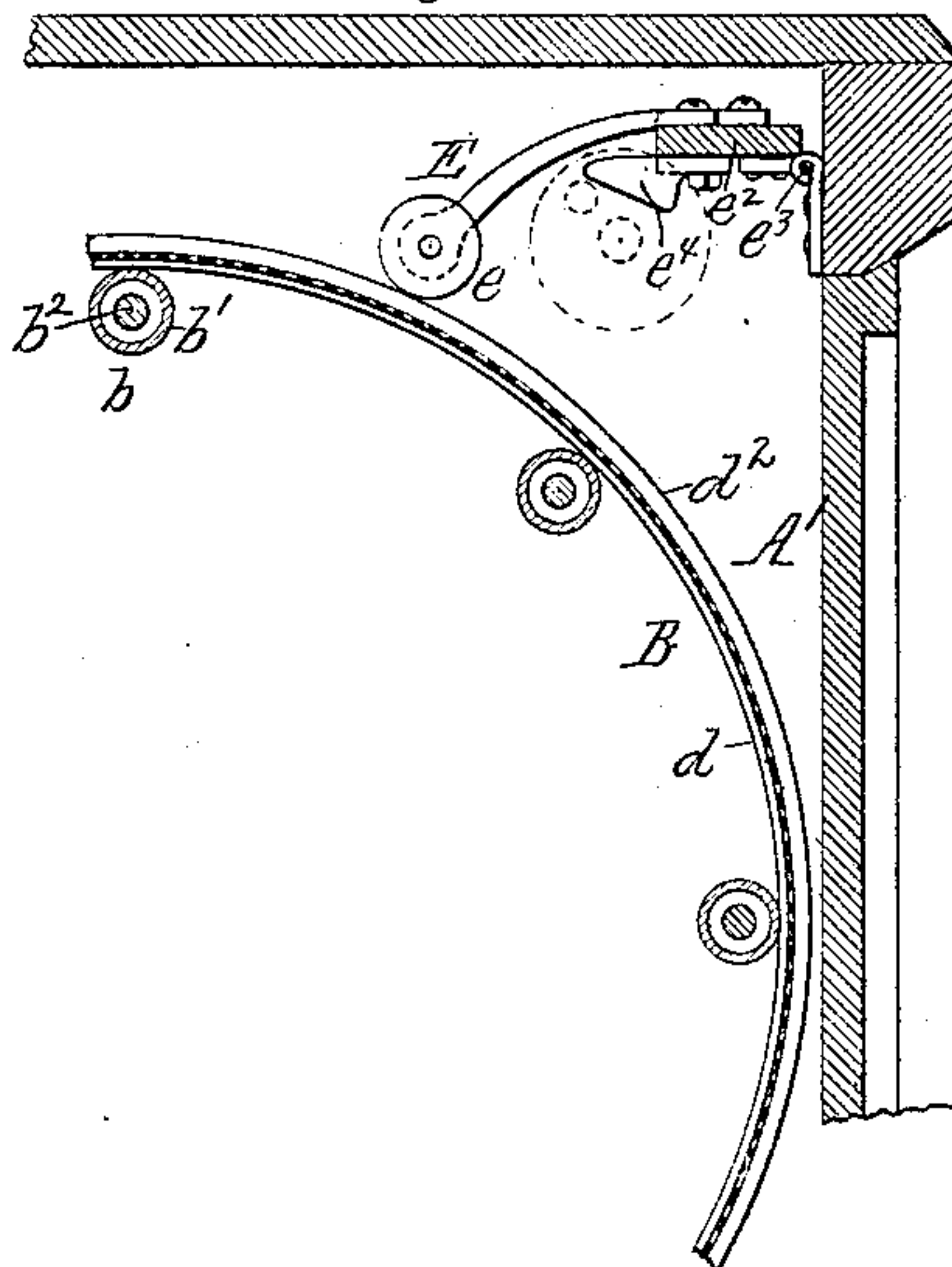


Fig. 9.

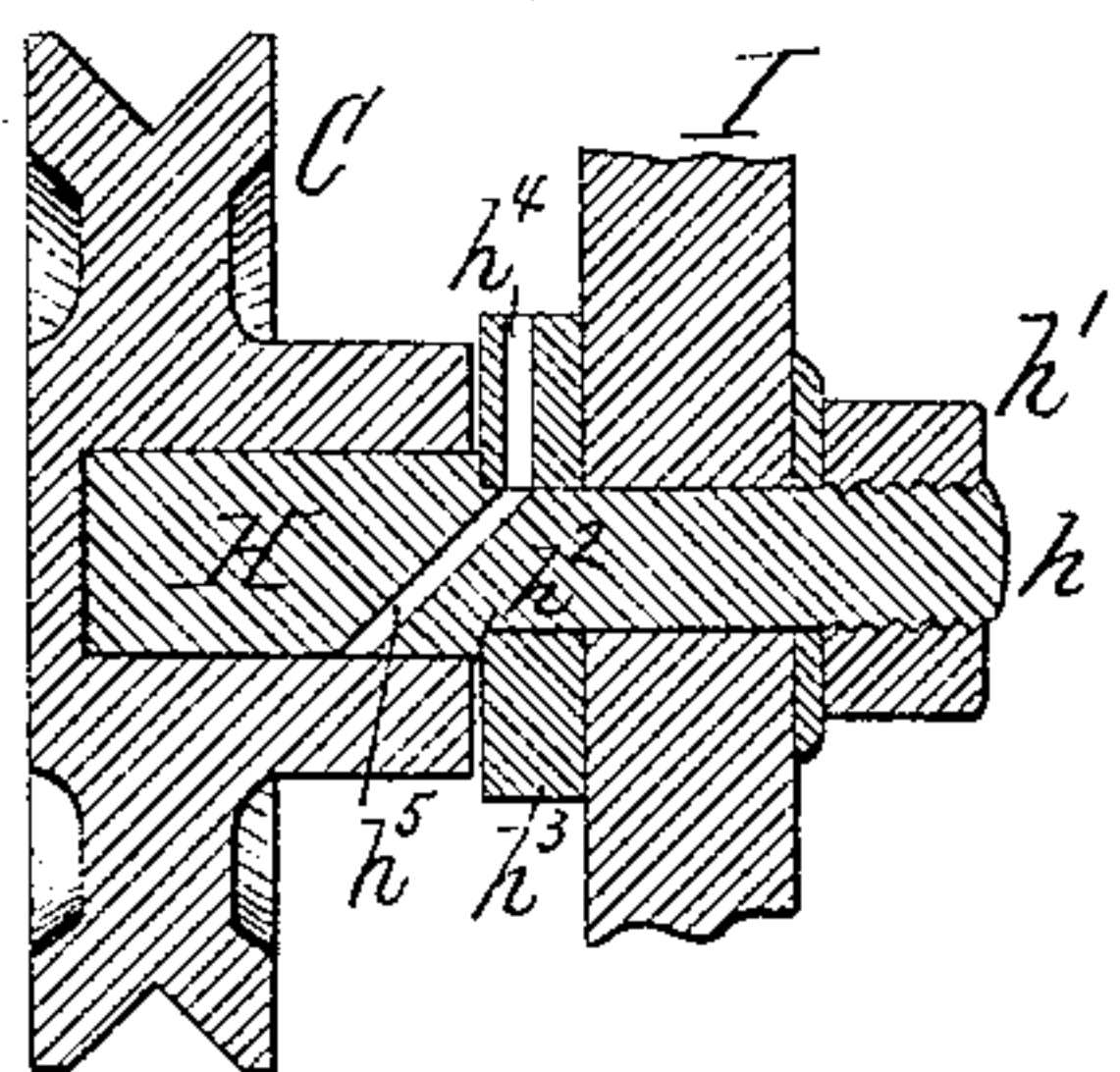
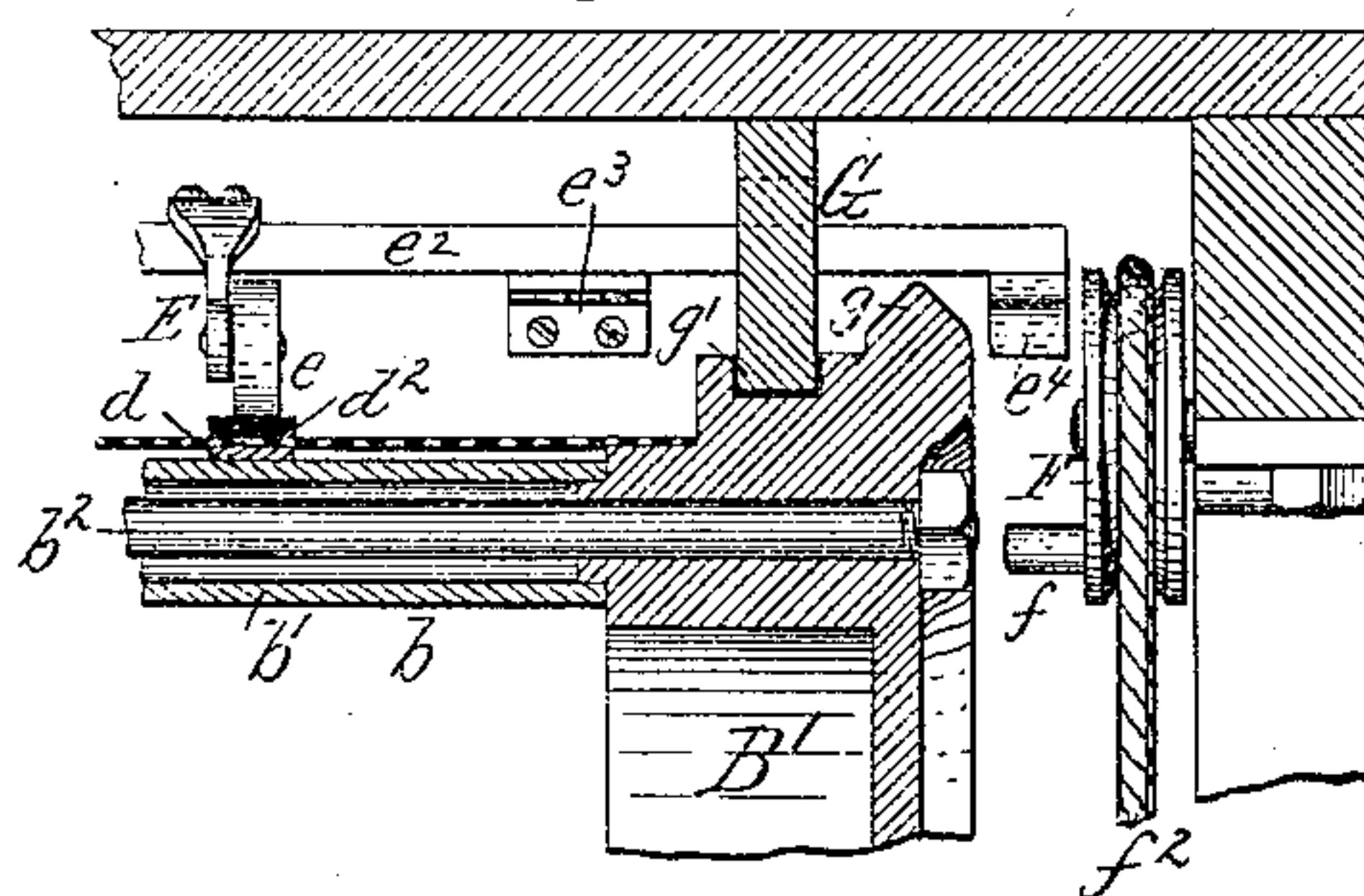
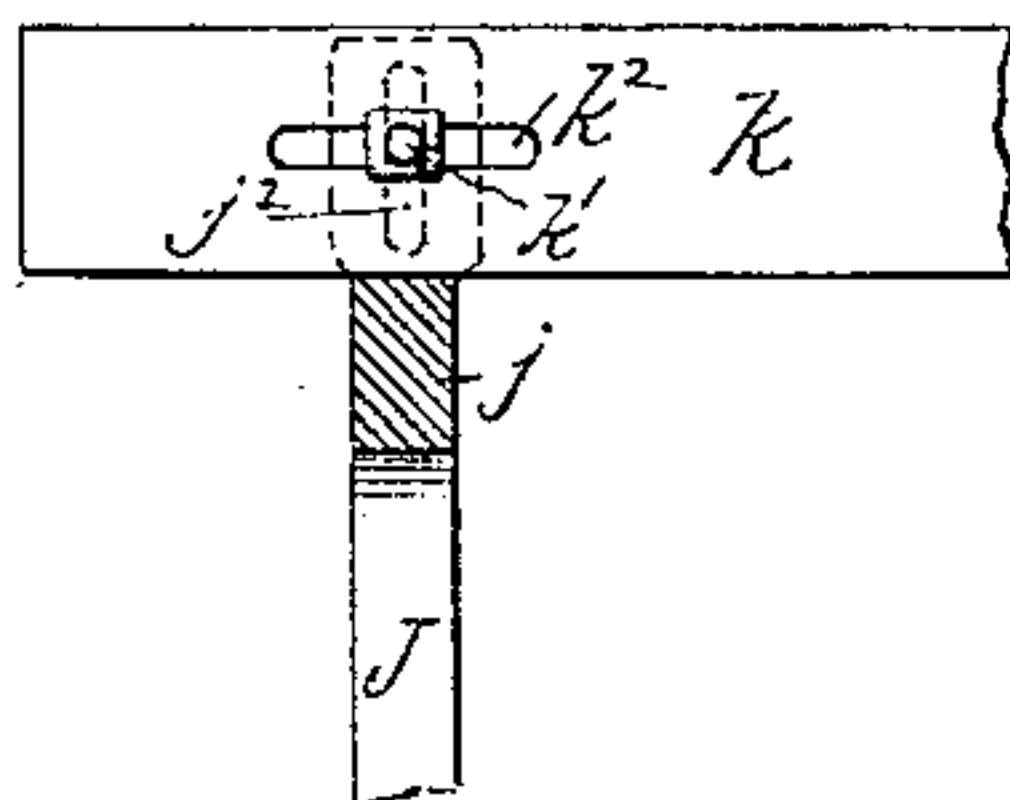


Fig. 8.



*Fig. 10.*



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# UNITED STATES PATENT OFFICE.

JOSEF NICHT, OF AUBURN, NEW YORK, ASSIGNOR OF ONE-HALF TO  
ALEXANDER J. NICHT, OF SAME PLACE.

## FLOUR-BOLT.

SPECIFICATION forming part of Letters Patent No. 250,952, dated December 13, 1881.

Application filed July 13, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEF NICHT, of Auburn, in the county of Cayuga and State of New York, have invented new and useful Improvements in Flour-Bolts, of which the following is a specification.

This invention relates more particularly to that class of flour-bolts which consist of a rotating cylinder covered with bolting-cloth and a series of beaters revolving within the cylinder, whereby the flour is driven through the meshes of the bolting-cloth.

The object of my invention is to improve the construction of such flour-bolts; and my invention consists of the particular improvements hereinafter described, and pointed out in the claims.

In the accompanying drawings, consisting of three sheets, Figure 1 is a side elevation of my improved machine, with a portion of the case broken away. Fig. 2 is a top-plan view of the machine with the cover of the case removed. Figs. 3 and 4 are, respectively, front and rear elevations of the machine. Fig. 5 is a longitudinal sectional elevation of the machine. Fig. 6 is a cross-section of the machine. Fig. 7 is a fragmentary cross-section on an enlarged scale, showing the jarring mechanism. Fig. 8 is a longitudinal section thereof. Fig. 9 is a sectional elevation of one of the rollers on which the bolting-cylinder revolves. Fig. 10 is a fragmentary sectional elevation, showing the manner of securing the beaters to the rings.

Like letters of reference refer to like parts in the several figures.

A represents the frame of the machine, and A' the inclosing-casing secured thereto.

B represents the bolting-reel, provided with two annular heads, B' B<sup>2</sup>, which are supported by and revolve on grooved rollers C.

b represents longitudinal stays, which connect the annular heads B' B<sup>2</sup>. The stays b are composed of a cylindrical sleeve or tube, b', which is placed between the annular heads B' B<sup>2</sup> and bears with its ends against the under sides thereof, and a tie-rod, b<sup>2</sup>, which extends through the sleeve b' and the annular heads B' B<sup>2</sup>, and is provided on the outer sides of said heads with screw-nuts, whereby the parts

are firmly secured together. The sleeves b' are held concentric with the bolts b<sup>2</sup> by annular projections surrounding the bolt-holes in the annular heads B' B<sup>2</sup>, as indicated in Fig. 8. The cylindrical form of the stays b offers the least obstruction to the contact of the meal with the bolting-surface, as the meal can freely enter the space between these stays and the bolting-cloth from either side, and the effective surface of the bolting-cloth is therefore not reduced by these stays to an appreciable extent.

d represents a series of metallic rings which surround the stays b and form supports for the bolting-cloth D', which is stretched over said rings and secured with its ends to the annular heads B' B<sup>2</sup>.

d<sup>2</sup> represents a ring of leather or other pliable material applied to the outer side of the bolting-cloth over each ring d.

E represents a series of hammers or knockers, having heads e, composed of india-rubber or other elastic material, which impinge against the leather rings d<sup>2</sup> of the bolting-cylinder. The hammers E are secured to a longitudinal piece, e<sup>2</sup>, so as to rise and fall simultaneously. The piece e<sup>2</sup> is hinged or pivoted at e<sup>3</sup> to the frame of the machine, and provided with a nose, e<sup>4</sup>, which a rotating pin, f, engages in such manner that the hammers are raised at every revolution of the pin f by the contact of the pin with the inclined face of the nose, and permitted to drop by gravity as soon as the pin f clears the nose e<sup>4</sup>. As the hammers drop they impinge against the leather rings d<sup>2</sup>, and thereby jar the bolting-cylinder and detach any material which may have lodged in the meshes of the bolting-cloth. The pin f is attached to a wheel or pulley, F, which is rotated by a crossed endless belt, f<sup>2</sup>, from a pulley, f<sup>3</sup>, secured to or forming part of one of the rollers C, upon which the bolting-cylinder revolves.

The annular heads B' B<sup>2</sup> are provided with  $\wedge$ -shaped rims g, which run in the similarly-formed grooves of the rollers C, and with rectangular grooves g', into which the stationary partitions G project, which form the heads or ends of the flour-chamber. The rollers C turn loosely upon stationary arbors H, which are



secured by a bolt,  $h$ , and nut  $h'$  in the slot  $i$  of brackets I, in which they can be adjusted horizontally. The hubs of the rollers C fit over the ends of the arbors H and inclose and protect the same, and the rollers are held against longitudinal displacement on the arbors by the rims  $g$  of the heads  $B'$   $B^2$  engaging in the grooves of the rollers C. The brackets I are secured to the posts of the frame A by suitable bolts. The arbors H are each formed with an enlarged end, upon which the hub of the roller C rotates, and which forms a shoulder,  $h^2$ , at its junction with the bolt  $h$ .

$h^3$  is a collar placed on the bolt  $h$  between the shoulder  $h^2$  and the bracket I, and  $h^4$  is an oil-passage formed in the collar  $h^3$ , and communicating with a similar passage,  $h^5$ , formed in the arbor H. The oil is by these passages readily introduced between the bearing-surfaces of the hub and arbor and the flour-dust is excluded from these surfaces.

$I'$  represents the beater-shaft, arranged axially in the bolting-cylinder, and supported in bearings  $i'$  in the frame of the machine.

J represents a series of spiders secured to the shaft  $I'$  within the bolting-cylinder, and provided with rims  $j$ , which carry ears  $j'$ , to which the beaters  $k$  are attached by a bolt,  $k'$ . The latter passes through a longitudinal slot,  $k^2$ , in the beater and a slot,  $j^2$ , in the ear, the two slots being arranged at right angles to each other, as clearly shown in Fig. 10, whereby the parts are enabled to be readily secured together without requiring great nicety in fitting.

L represents a hopper arranged lengthwise underneath the bolt, and  $L'$  a screw-conveyer arranged in a trough at the bottom of the hopper. The inclined sides  $l$  of the hopper L are constructed of sheet-iron, zinc, or other suitable metal to facilitate the delivery of the sifted flour into the conveyer-trough. The latter is provided with a discharge-orifice,  $l'$ . The conveyer-shaft  $l^2$  is supported in bearings  $m$  in the frame of the machine, and rotated by an endless belt,  $m'$ , running over pulleys  $m^2$   $m^3$ , mounted, respectively, upon the beater-shaft  $I'$  and the conveyer-shaft  $l^2$ . The beater-shaft  $I'$  is provided with a driving-pulley, M, to which power is applied from any convenient source.

$n$  is a pulley mounted on the conveyer-shaft  $l^2$ , and  $n'$  is an endless belt, whereby motion is transmitted from the pulley  $n$  to a pulley,  $n^2$ , cast on or secured to the annular head  $B'$ , whereby the bolting-cylinder is rotated in the same direction as the beaters, but with less velocity.

$o$  is the feed-spout, the lower end of which projects into the bolting-cylinder through the central opening in the head  $B'$ , and whereby the meal is introduced into the cylinder.

$p$  is an opening formed in the rear wall of the casing  $A'$  for admitting air into the bolting-cylinder. This opening is protected by a slide,  $p'$ , covered with gauze or some other fabric which will admit the air and exclude in-

sects, dust, &c., from the interior of the machine.

Q represents the tail-board, arranged within the annular head  $B^2$  and secured to the casing  $A'$ . The upper portion,  $q$ , of this tail-board is inclined to prevent the meal from lodging on the same, and the lower portion of the tail-board is provided with a bran-discharge opening,  $q'$ , which communicates with a chamber,  $q^2$ , at the tail end of the machine.

$r$  is a screw-conveyer arranged transversely on the bottom of the chamber  $q^2$ , for the purpose of collecting the material which passes into the chamber  $q^2$  through the opening  $q'$ , and conveying such material to one side of the machine.

S represents a separating-sieve, arranged in the triangular space between one of the inclined sides  $l$  of the hopper L and the vertical side of the casing  $A'$ . This sieve is supported upon arms or rods  $s$ , and vibrated by an eccentric,  $s'$ , mounted on a cross-shaft,  $s^2$ , and connected with the sieve-frame by a pitman,  $s^3$ . The shaft  $s^2$  is driven by an endless belt,  $s^4$ , from a pulley,  $s^5$ , mounted on the beater-shaft  $I'$ . The sieve S is covered with several sections of bolting-cloth of different degrees of fineness, and provided with a separate discharge-hopper,  $t$ , for every section of the sieve. The conveyer  $r$  delivers the material upon the head of the sieve, and the tailings are discharged through a spout,  $u$ , at the opposite end of the sieve.

The meal is fed into the bolting-cylinder through the spout  $o$ , and subjected to the action of the beaters, which drive the flour through the meshes of the bolting-cloth into the chamber surrounding the bolting-cylinder, while the bran, middlings, and other coarse particles are discharged from the interior of the bolting-cylinder through the aperture  $q'$  into the chamber  $q^2$ . The flour which has passed through the meshes of the bolting-cloth is collected in the hopper L and discharged by the conveyer  $L'$  through the opening  $l'$ . The coarse material which is discharged into the chamber  $q^2$  is collected by the conveyer  $r$  and delivered upon the shaking sieve S, which latter effects a separation of the middlings from the coarse bran. A portion of the air-current which is generated by the revolution of the beaters  $k$  escapes from the bolting-cylinder through the aperture  $q'$ , passes through the chamber  $q^2$  and into the inclosed space over the sieve S, and after passing over the latter escapes through the spout  $u$ . The light floating impurities are carried along with this air-current and discharged together with the bran through the spout  $u$ .

I claim as my invention—

1. The combination, in a bolting-cylinder, of longitudinal stays  $b$ , metallic rings  $d$ , which support the bolting-cloth, rings  $d^2$ , applied to the outside of the bolting-cloth over the rings  $d$ , and hammers E, which strike the rings  $d^2$ , and thereby jar the bolting-cloth, substantially as set forth.



2. The combination, with a bolting-cylinder, B, of the tail-board Q, arranged within the annular head B<sup>2</sup> at the tail end of the cylinder, and constructed with an inclined top piece, q, substantially as set forth.

3. The combination, with a bolting-reel, B, inclosing-case A A', and hopper L, arranged underneath the reel, of a separating-sieve, S, arranged in the space between the sides of the hopper and the inclosing-case, and receiving the coarse material from the tail end of the bolting-reel, substantially as set forth.

4. The combination, with a bolting-reel, B, provided with beaters k, which generate an air-current within the bolting-reel, of a separating-sieve, S, a casing inclosing the sieve, and passages whereby the coarse material and the air-current are conducted from the bolting-reel to and over the separating-sieve, substantially as set forth.

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