

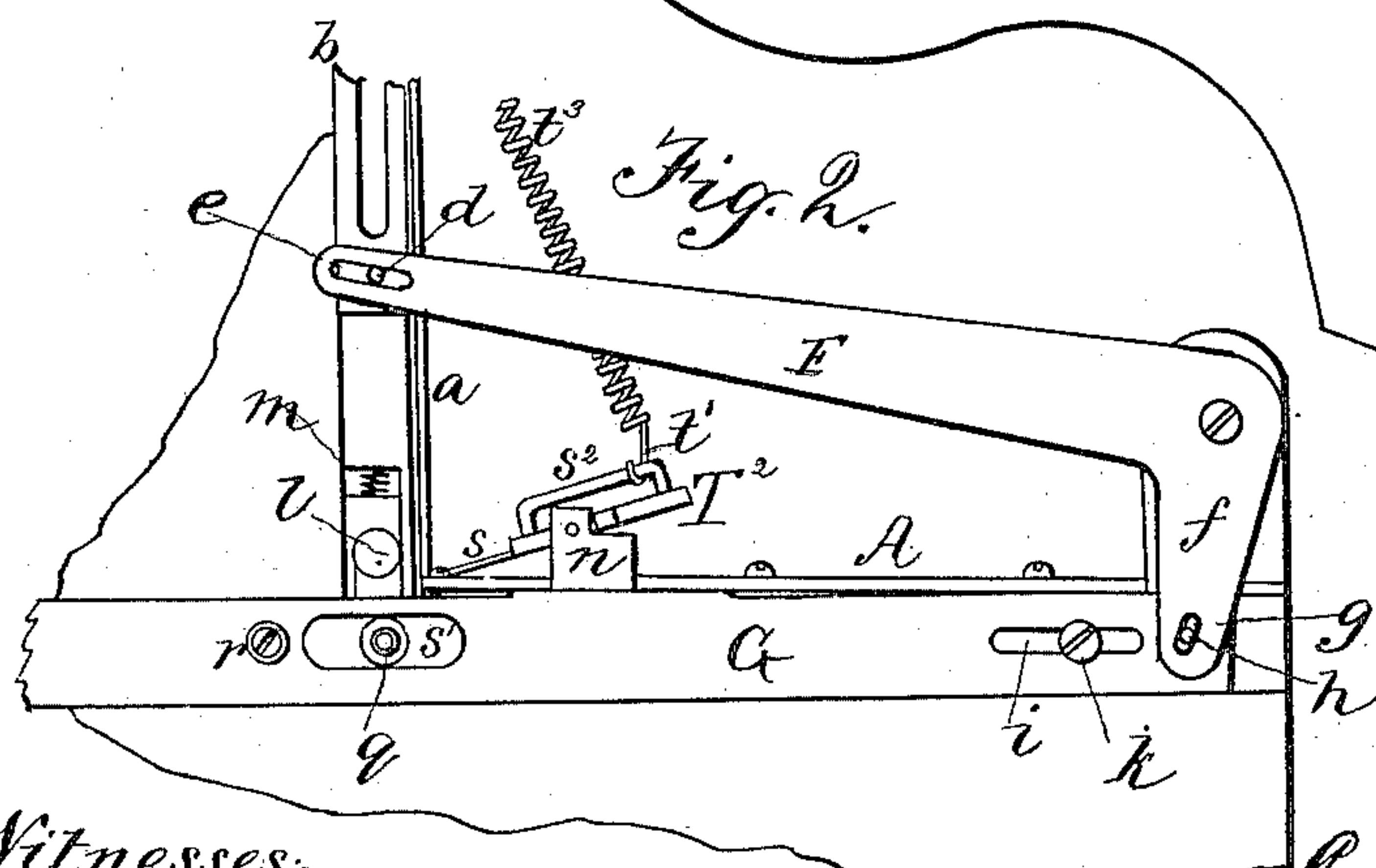
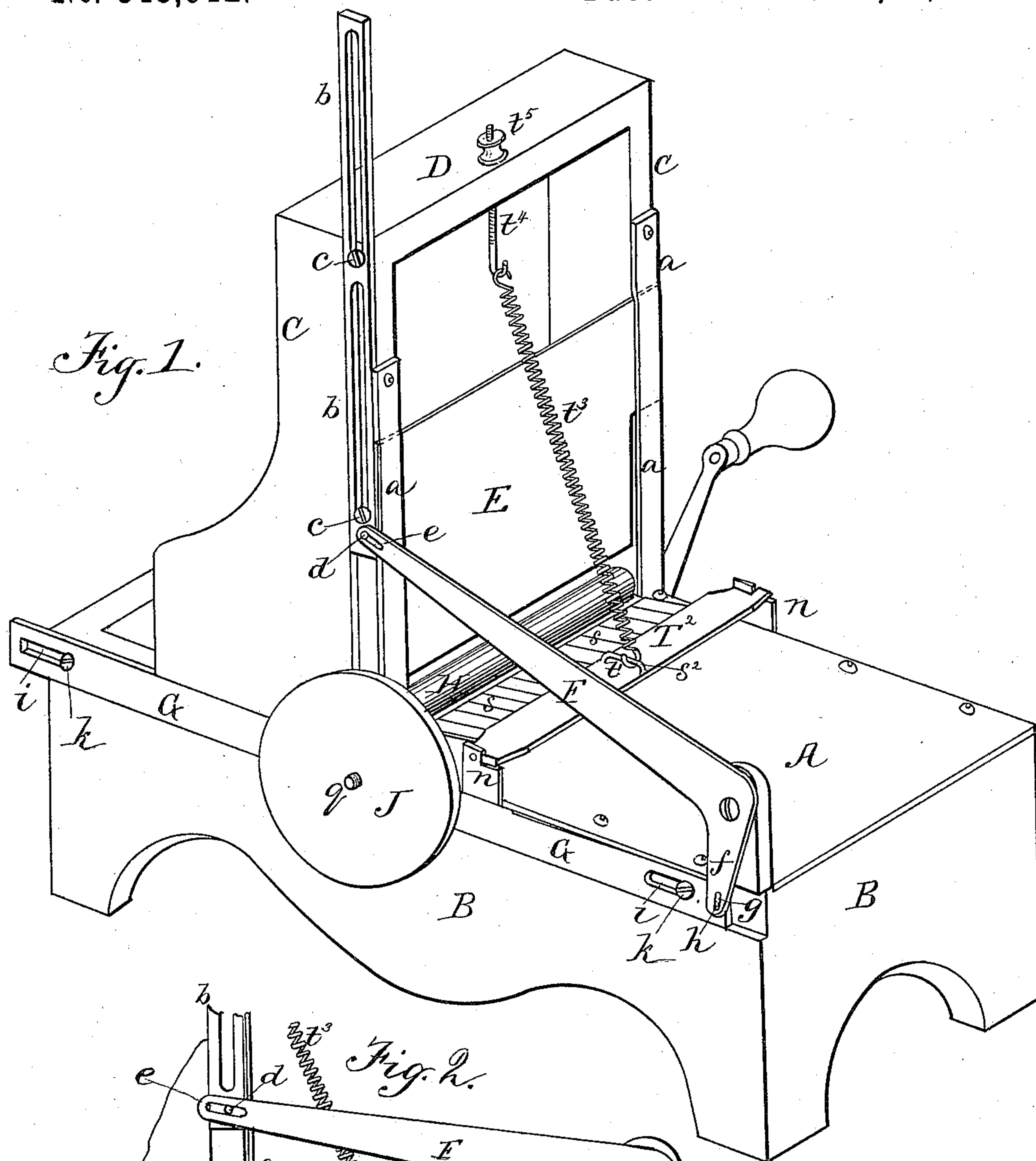
(No Model.)

3 Sheets—Sheet 1.

P. DE MELLO SOUZA, Jr.
PLAITING MACHINE.

No. 343,912.

Patented June 15, 1886.



Witnesses:

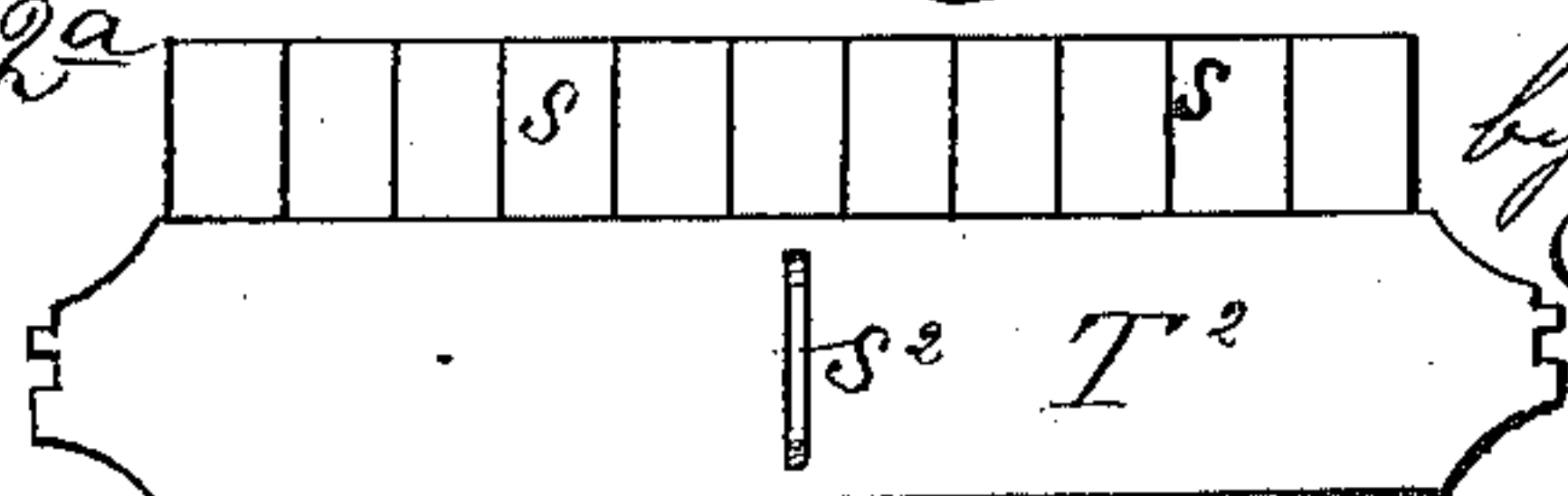
R. E. Grant

W. Rawlins

Inventor:

Pedro de Mello Souza, Jr.,
by his Attorneys

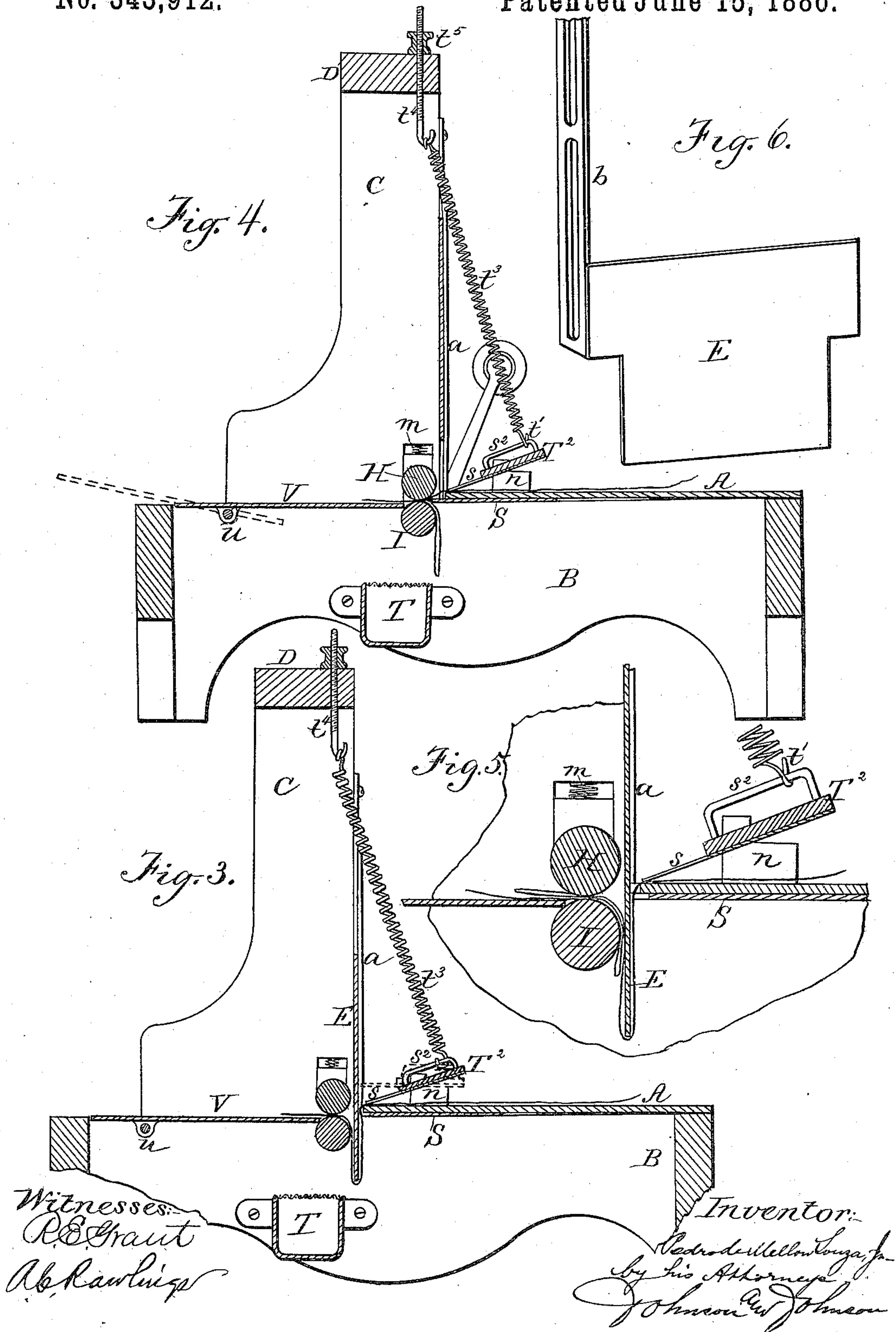
John A. Johnson



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3 Sheets—Sheet 3.

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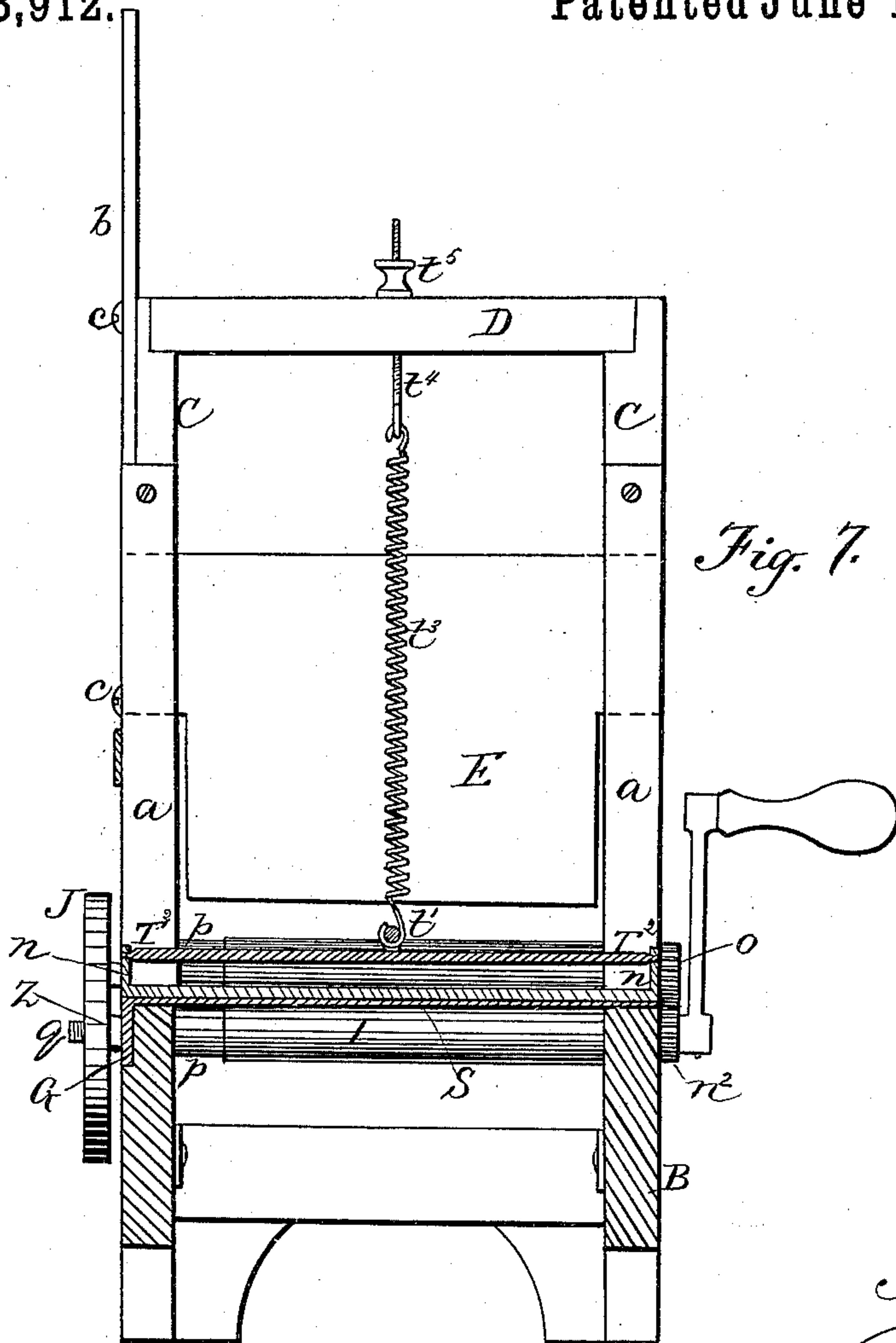


Fig. 7.

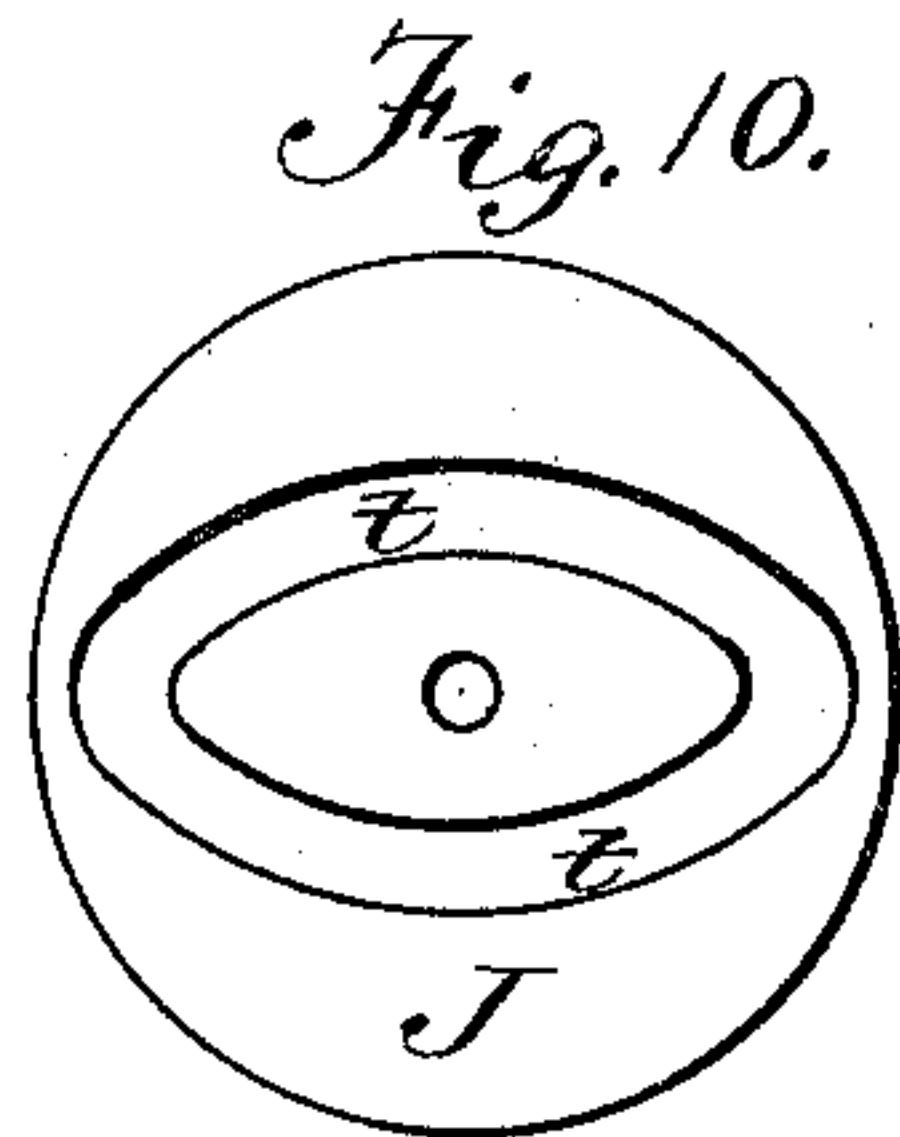


Fig. 10.

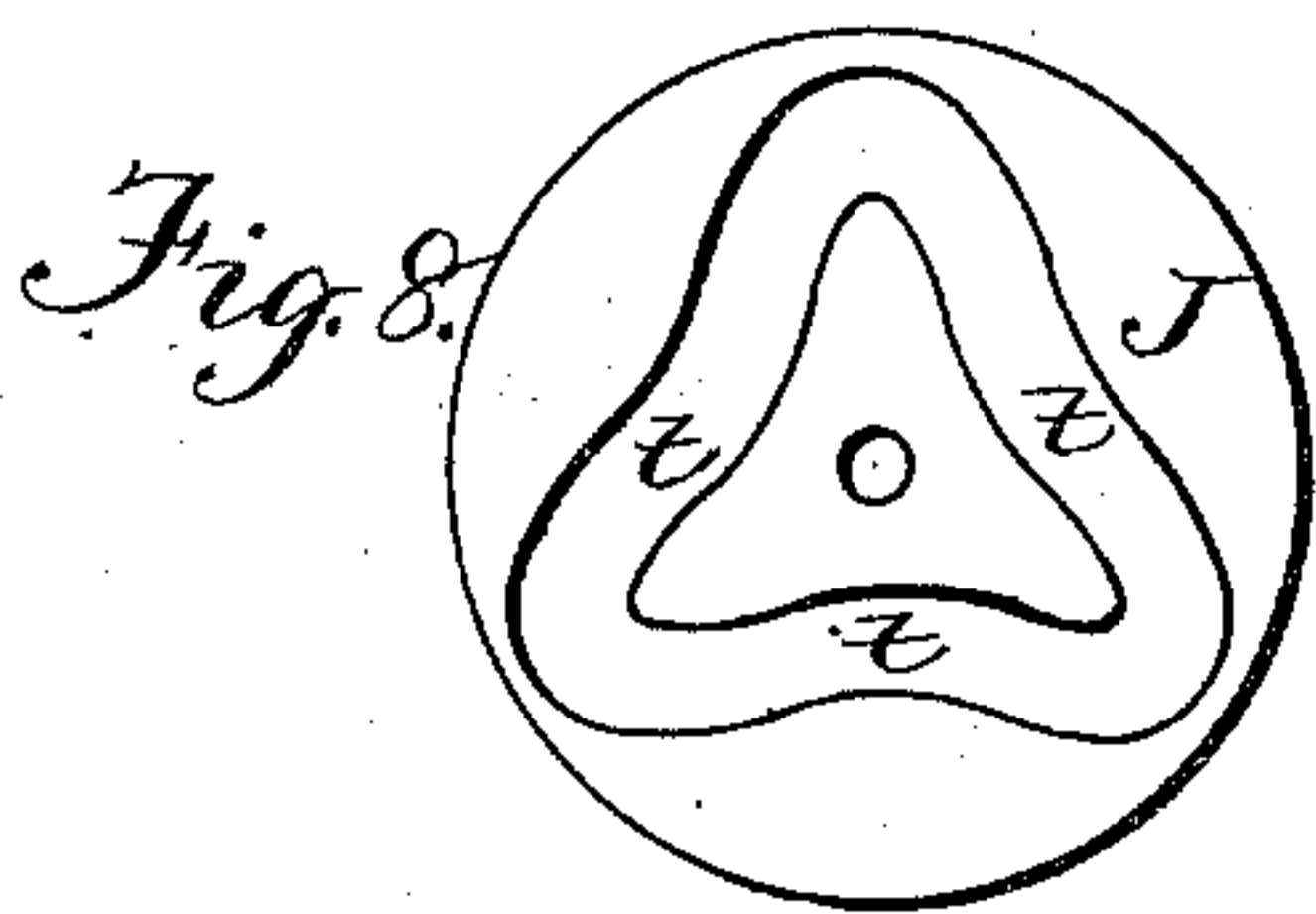


Fig. 8.

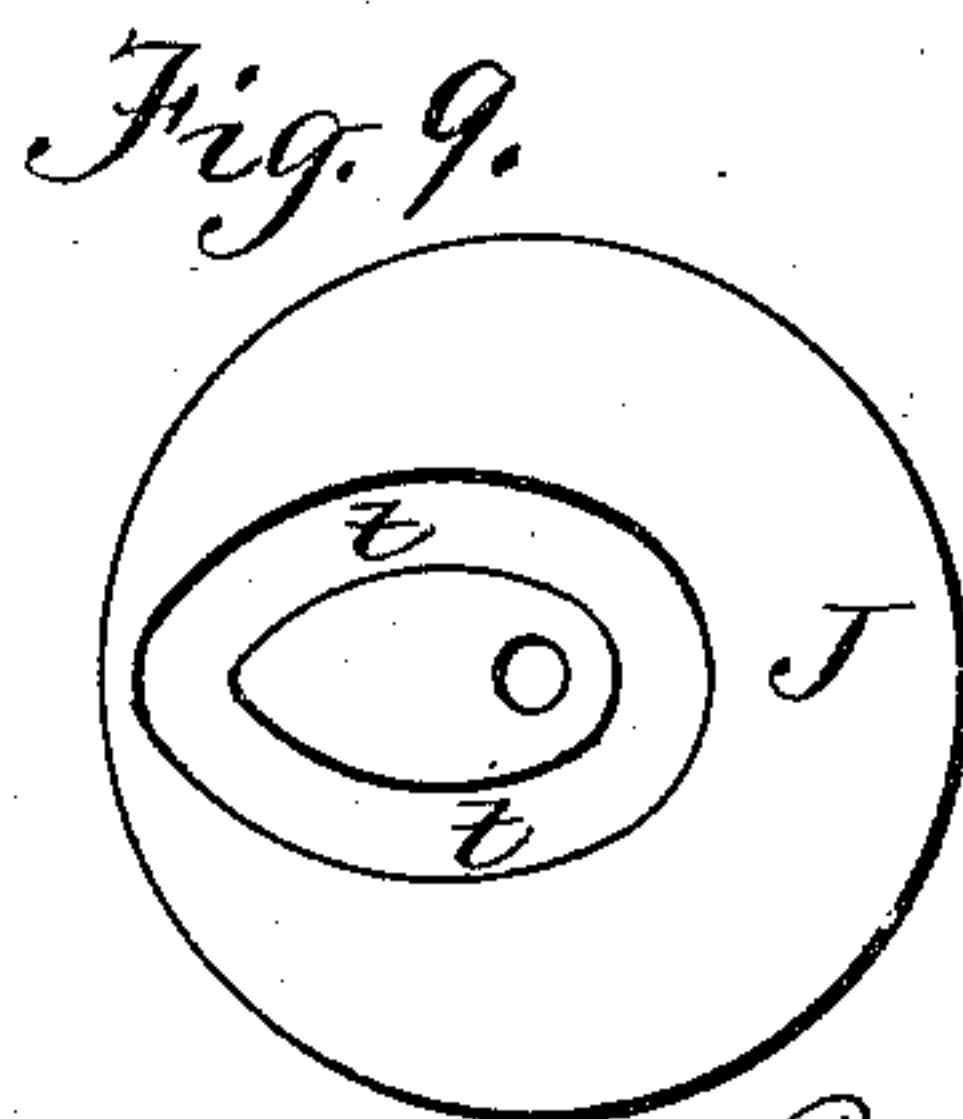
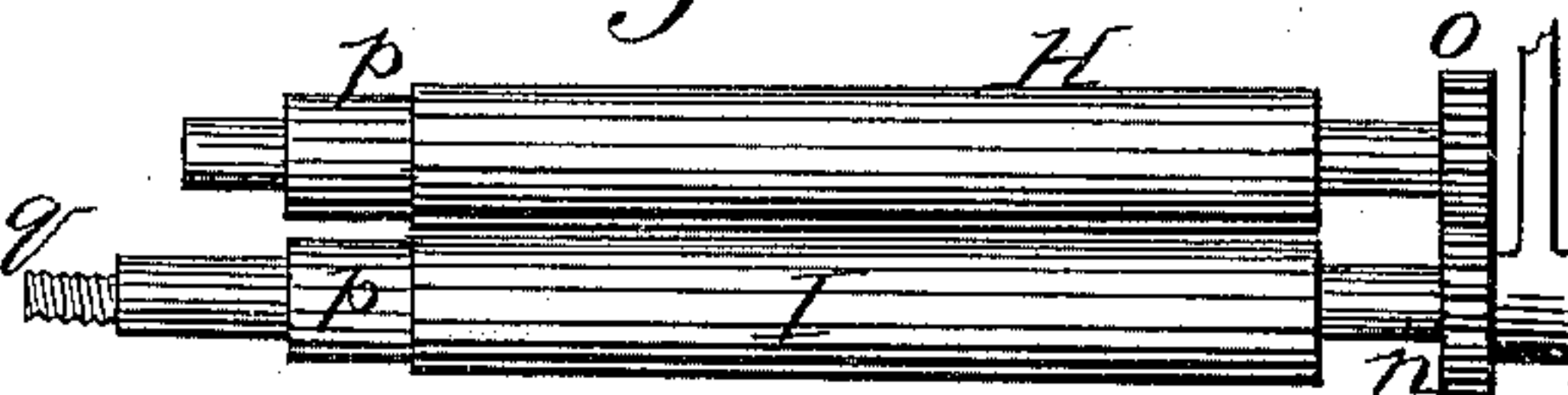


Fig. 9.

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Fig. 11.



Inventor:
Pedro de Mello Souza, Jr.,
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Johnson & Johnson.

UNITED STATES PATENT OFFICE.

PEDRO DE MELLO SOUZA, JR., OF ITHACA, NEW YORK.

PLAITING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,912, dated June 15, 1886.

Application filed February 16, 1886. Serial No. 192,067. (No model.)

To all whom it may concern:

Be it known that I, PEDRO DE MELLO SOUZA, Jr., a subject of the Emperor of Brazil, temporarily residing at Ithaca, in the county of Tompkins and State of New York, have invented new and useful Improvements in Plaiting-Machines, of which the following is a specification.

I have produced an improved machine for plaiting fabrics, in which the plaiting operation is effected by the co-operation of two crimping-plates and pressure-rolls, one plate having a vertical movement in relation to a table and to the pressure-rolls, to form a fold in the goods by the descent of said plate beneath the table in front of said rolls, and the other crimping-plate moving horizontally beneath the table to feed the plait or fold to the pressure-rolls, whereby each fold, as it is made, is carried between the rolls in succession, and the plaited goods thus fed out upon the table. In this operation the fabric is fed forward by the joint action of the horizontal subjacent crimping-plate and the pressure-rolls as fast as it is crimped by the vertically-acting plate.

Provision is made for adjusting the movements of the crimping apparatus at pleasure, to make different widths of plaits, for holding the fabric under tension during the operation of plaiting, and for the releasement of such tension device for inserting the fabric before the crimping action commences; for heating the pressure-rolls between which the fabric, as it is plaited, is passed; and for operating the crimping-plates in their regular order by connections one with the other and with one of the pressure-rolls.

Referring to the accompanying drawings, a machine organized for such operation is illustrated, and in which—

Figure 1 represents, in perspective, my improved plaiting-machine. Fig. 2 shows a detail, in side view, of the operating-connections of the two coacting crimping-plates. Fig. 2^a shows the tension-plate composed of thin spring-fingers. Fig. 3 shows a vertical section of the machine, in which the vertical crimping-plate is shown as having formed the first plait or fold, the fabric being held by the pressure-rolls and the tension device. Fig. 4

shows a similar view, the vertical crimping-plate being shown raised above the table to allow the horizontal crimping-plate to feed the plait or fold in the fabric into position to be seized by the pressure-rolls. Fig. 5 shows a similar section, enlarged, the plait or fold shown in Fig. 4 being shown as having been partially carried between the pressure-rolls and the vertical crimping-plate having again moved down to form another plait or fold in the fabric. Fig. 6 shows the vertically-operating crimping-plate and its operating-slide. Fig. 7 shows a vertical cross-section of the machine, taken in front of the rolls. Figs. 8, 9, and 10 are views of different-shaped cam-disks, by which the movements of the crimping-plates are effected and adjusted for different widths of plaits. Fig. 11 shows the pressure-rolls.

The machine is designed for the operation of plaiting any fabric by the simultaneous action of one vertically-moving crimping-plate, which makes a fold or loop, and a subjacent horizontally-moving crimping-plate, which assures the plait. The feed-table A rests upon a suitable frame, B, and is suitably fastened thereto.

Looking at Fig. 1 it will be seen that at about two-thirds distance from the front or feeding end of the machine there are uprights C C, crossed by a top beam, D, and on the front of said uprights there are guide-strips *a a*, which leave space for the play of a vertical crimper-plate, E, which movement shall be presently described. Looking at said Fig. 1 there is seen a slotted bar, *b*, adapted for up-and-down movement, and having its play controlled by suitably-arranged stops, *c c*, whereby the movement of the crimper-plate E, which said slotted bar carries, is ascertained. This plate E is brazed or suitably fastened to said vertically-moving slotted bar. Projecting from said vertically-moving bar at the bottom thereof is a pin, *d*, which works in a slot, *e*, of suitable length in the bell-crank lever F, Fig. 2, fulcrumed in any suitable manner at the left front corner of the bed-plate or feed-table. The crank-arm *f* of this lever has a slot, *g*, of suitable length, as is well understood, to engage with a pin, *h*, projecting from a slide-bar, G, whose upper edge is flush with the hori-

zontal crimping-plate which it carries. This bar G has slots *i i* of suitable length at each end, which work over headed pins *k k*, and is operated to move horizontally, as will be presently described. An upper roll, H, and a lower roll, I, are suitably journaled in the frame, one below and one above the table, the journals of the upper roll being cushioned by springs *m* in the frame, and both arranged one above the other at the rear side of the vertically-moving crimping-plate. Power is applied to the lower roll, and a pinion, *n*², thereon matches with a pinion, *o*, Fig. 7, on the upper one on that side of the machine to which the power is applied. These rolls are made a little less in diameter at their left ends, at *p*, Fig. 11, for the accommodation of the binding-seam of the fabric to be plaited. The journal of the lower or operating roll, I, Fig. 7, has a threaded projection, *q*, upon which a grooved cam-disk, J, is screwed and communicates motion to the slide-bar G, by means of the pin *r*, fitted with a sleeve working in the said cam-groove *t*. It should have been stated that the journal of the lower roll, I, with its threaded projection *q*, passes through a sufficient slot, *s*, in the bar G, whereby the said triple-slotted bar may have free horizontal play when moved, as hereinafter set forth.

The disks or cams J have grooves *t* of different descriptions for the purpose of varying the frequency and length of the stroke of the crimpers, thereby giving different widths of plaits. Any one of these disks is screwed up to the shoulder *z*, Fig. 7, upon the threaded projection *q* of the lower roll, I, the pin and friction-roller *r* coming within the groove of the cam-disk J, when motion being applied to the said lower roll it is transmitted to the horizontally-moving bar G by means of the cam J and the pin and friction-roller *r*, and from that to the vertically-moving crimping-plate E, by means of the bell-crank lever F. A lower crimping-plate, S, is brazed or suitably fastened to the horizontally-moving bar G, as shown at Fig. 7, and moves back and forth as said bar moves. Thus both crimpers are operated by the same motion, the vertically-moving crimping-plate doing its work first, and the horizontally-moving under one doing its work immediately after.

In the operation of inserting the fabric to be crimped between the rolls, it is necessary that the cloth should be evenly adjusted as it is fed forward by hand, and for this purpose I pivot to lugs *n n*, rising in front of the rolls from the table a flat bar, T², carrying a series of spring-fingers, *s*, the said bar having upon its surface a loop, *s*², which is embraced by a hook, *t'*, of a spiral spring, *t*³, fastened, as will be presently described, to the top bar of the frame. The cloth being handled and laid upon the table, the hook *t'* is moved from the operator and, by the action of spiral spring *t*³, the bar T² is caused to turn upon its pivot to bring the spring-fingers up away from the cloth, as shown in dotted lines in Fig. 3. The power

is then applied, the cloth feeding forward until caught between the rolls, when the hook is then to be moved forward upon the loop *s*², to bring the spring-fingers *s* down upon the cloth, and thus to hold it with a gentle pressure and aid in feeding it uniformly through the rolls. This operation will be understood by referring to Figs. 3, 4, and 5.

As before stated, the spiral spring is fastened at the top bar of the frame by a depending hook, *t'*, which hook passes through said top bar and is screw-threaded for the purpose of receiving a thumb-screw, *t*⁵, to regulate the tension of the spring.

Immediately beneath the rolls and secured in the frame there is a suitable alcohol-lamp, T, Figs. 3 and 4, for the purpose of heating the rolls. Access is had to this lamp by hinging the plate V at *u* in rear of the uprights and over which the cloth is delivered after crimping, so that by pressing down the rear end of the said plate it will assume the position shown by dotted lines in Fig. 4, and may then, after the lamp is attended, be turned to its normal position.

I claim—

1. The combination, with a crimping-blade reciprocating vertically in relation to the feed-bed, of an under or subjacent horizontally-operating crimping-blade, means for changing the intervals and lengths of movement of said crimping-blades, pressure-rolls, and means for operating the parts for the purpose of producing an organized machine to plait fabrics in different widths, substantially in the manner and for the purpose set forth.

2. The combination, with the feed-bed A of a plaiting-machine, of the operating-rolls H I, the movable bar G, provided with the pin *r*, the grooved disk J, secured to the lower roll, I, to which power is applied, the uprights C C, the vertically-moving bar *b*, the vertically-moving crimping-blade E, carried by said bar *b*, the subjacent plate S, carried by said movable bar G, and a bell-crank lever, F, substantially as and for the purpose set forth.

3. The combination, in a plaiting-machine, of two feed-rolls, two plaiting-blades, and means for connecting said blades with each other, with interchangeable disks, each having a different-shaped groove, and means for connecting said disks with the power-roll, whereby to control and to change the intervals and lengths of movement of the vertically and horizontally moving blades, substantially as described.

4. The combination, in a plaiting-machine, of the feed-bed, the feed-rolls, and the vertically and horizontally operating crimping-plates, with a pivoted tension-plate having spring-fingers *s*, and provided with the loop *s*², and the tension-spring having a shifting connection in said loop, substantially as described, for the purpose specified.

5. The combination, in a machine for plaiting fabrics, of feeding and compressing rolls, arranged to receive the fabric from a table,

with a crimping-plate operating vertically through an opening in said table and a plate operating horizontally beneath said table to deliver the folds or plaits successively made in the fabric to the feeding and compressing rolls, substantially as described.

6. The combination of a pair of rolls and a device for regulating the tension of the fabric during the operation of crimping with the feed-bed and coacting crimping-plates, one of which is arranged to operate vertically through the table in close proximity to the rolls, the other being arranged to operate horizontally beneath the feed-bed in line with the meeting faces of said rolls, substantially as described.

7. The combination, in a plaiting-machine, of the feed-bed, the feed-rolls and the crimping-plates, with a lever connecting said plates, a cam-disk, and a horizontal slide connecting the cam and lever for operation, substantially as described.

8. The combination, with the table and the rolls, of a crimping-plate arranged to operate vertically in front of said rolls and a plate arranged to operate horizontally in front of and in line with the meeting sides of said rolls, and means whereby the plates are caused to operate in alternate order with a continuous feed of the rolls, for the purpose described.

9. The combination, with the co-operating plaiting-rolls and vertically and horizontally operating crimping-plates, of a tension-plate for the fabric and an adjustable spring having a shifting connection with said tension-plate, substantially as described.

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

PEDRO DE MELLO SOUZA, JR.

Witnesses:

A. E. H. JOHNSON,

J. W. HAMILTON JOHNSON.