

No. 635,198.

Patented Oct. 17, 1899.

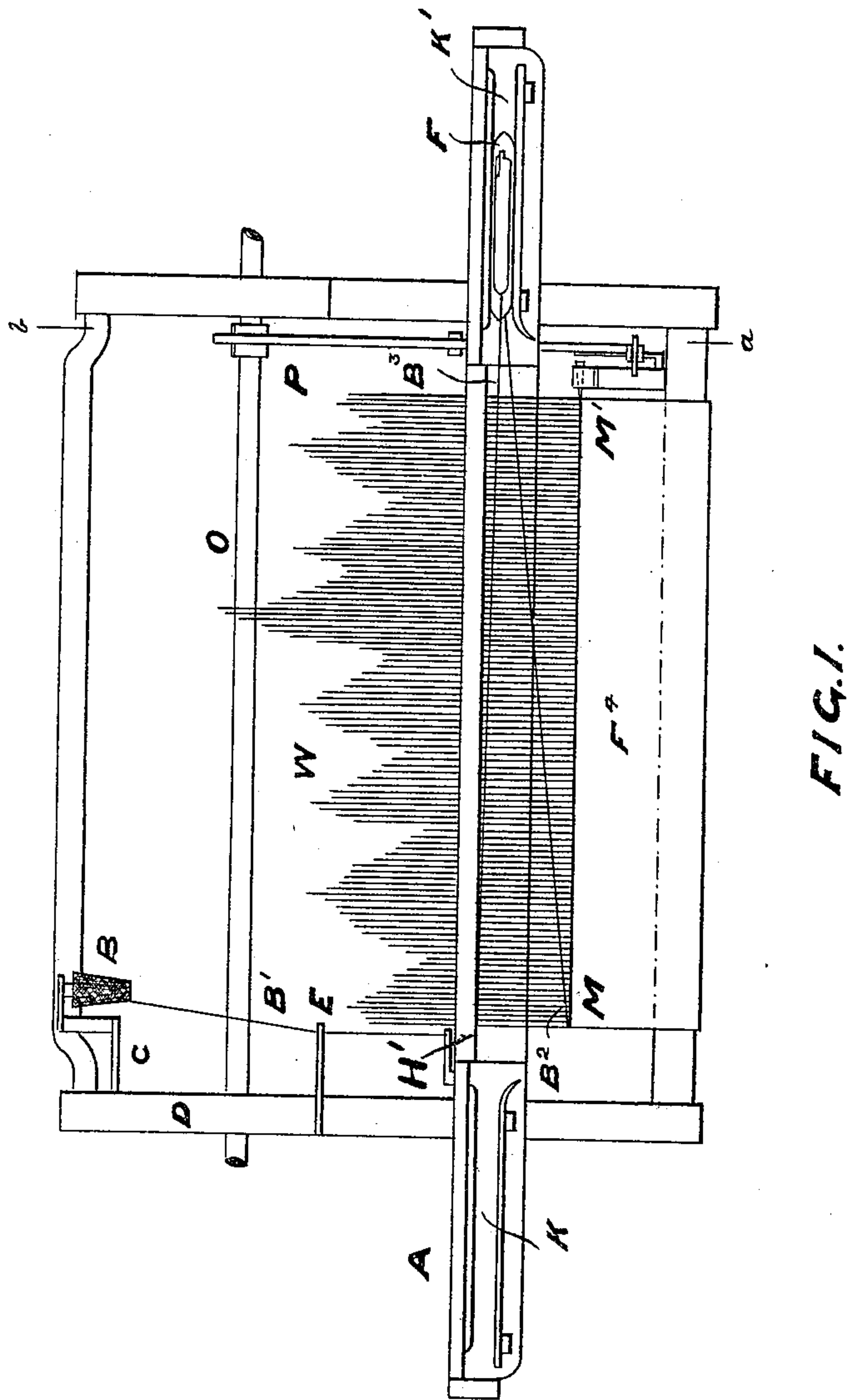
E. SMITH.

APPARATUS FOR WEAVING FABRICS.

(Application filed Aug. 31, 1897.)

(No Model.)

6 Sheets—Sheet 1.



Witnesses:

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FIG. 2.

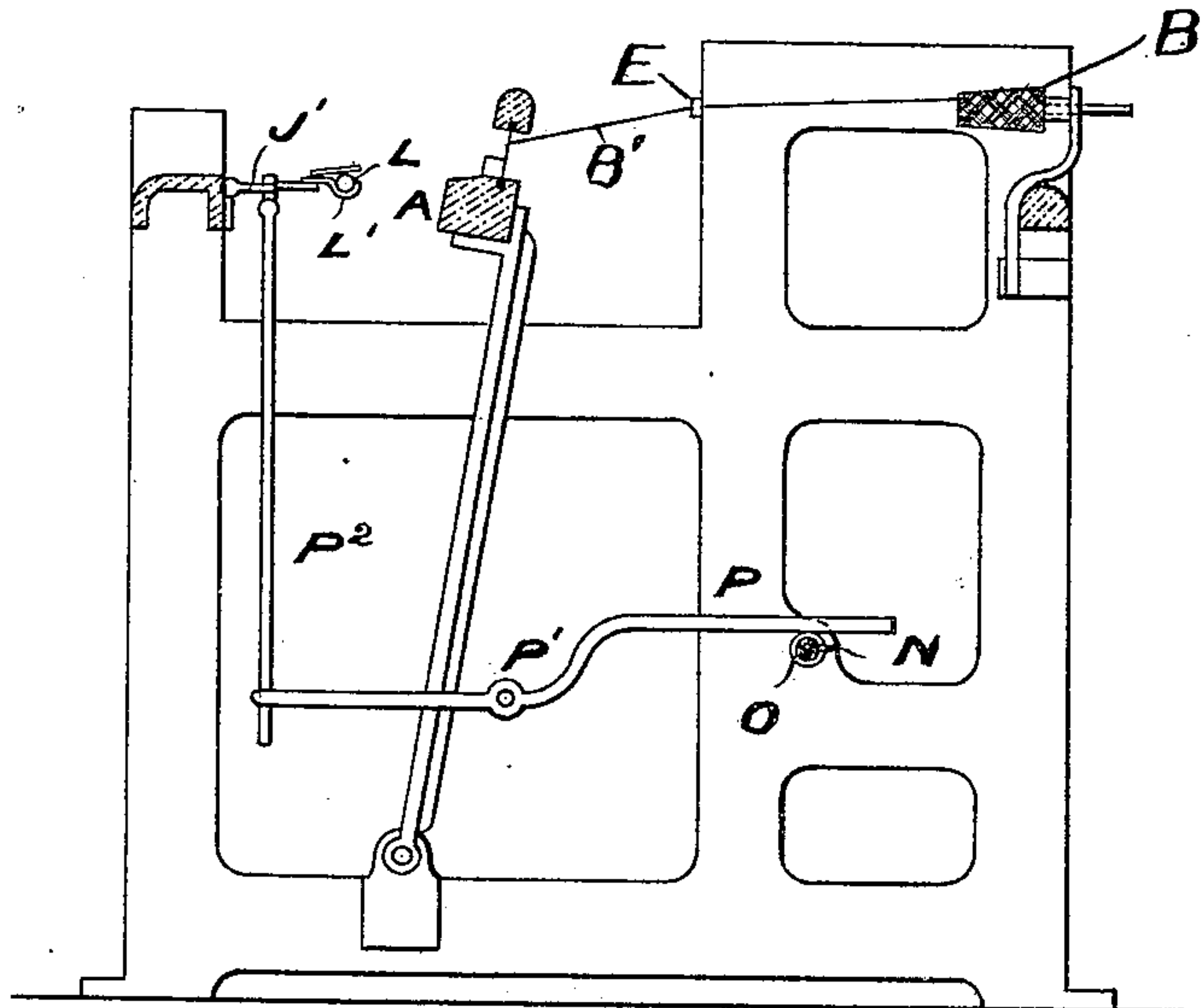


FIG. 3.

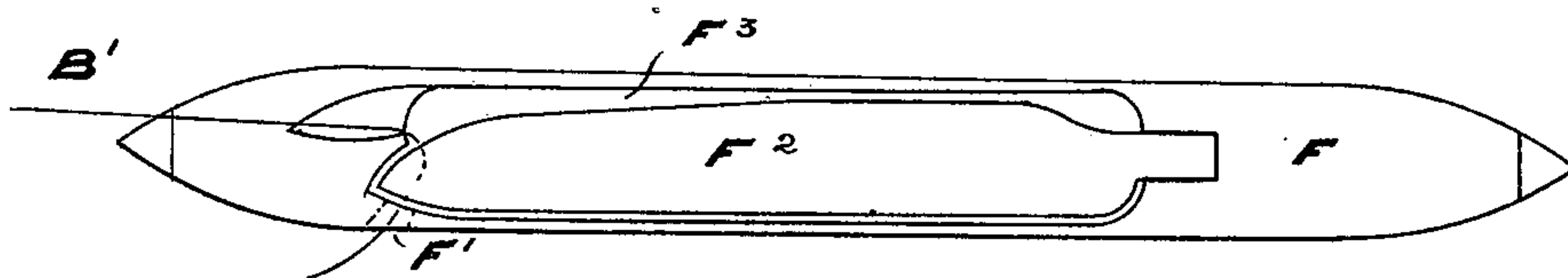
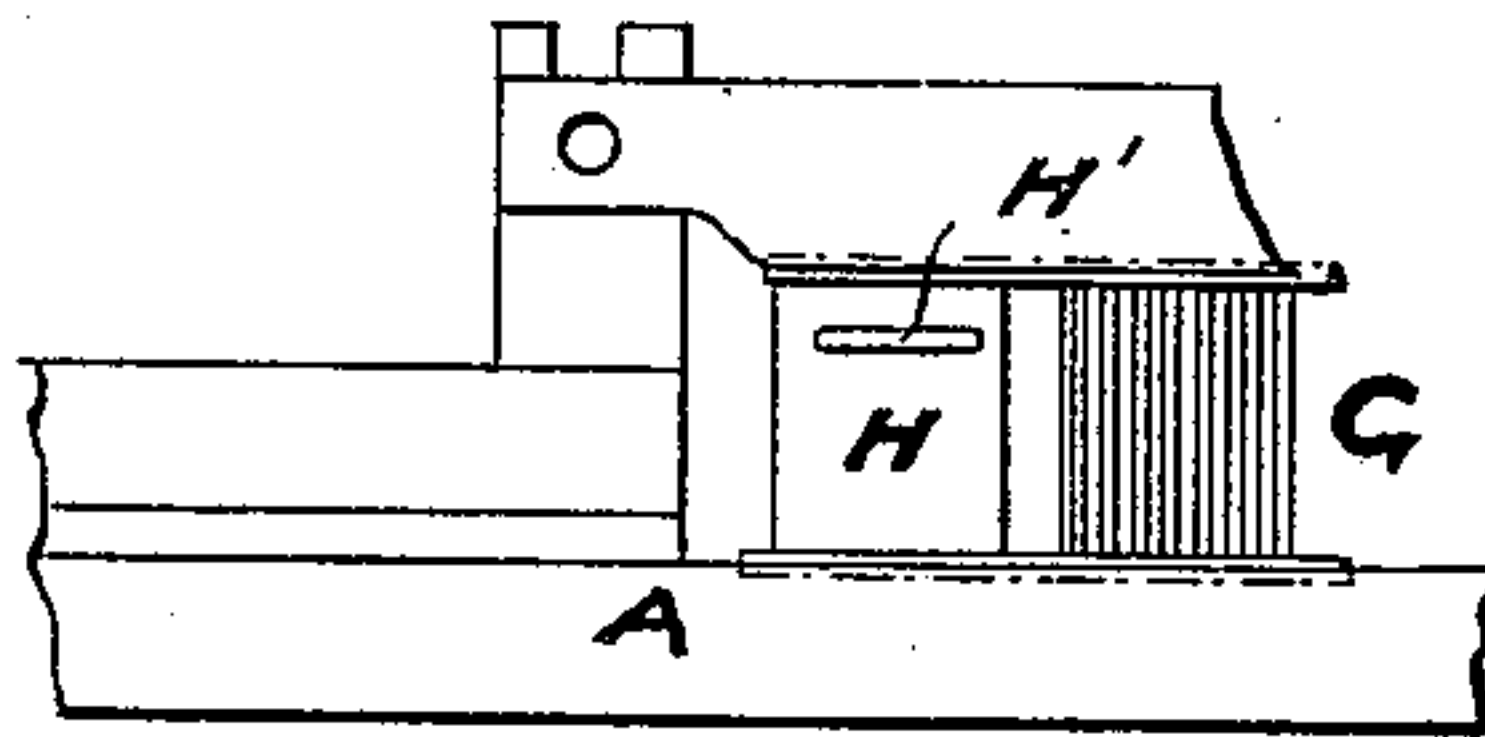
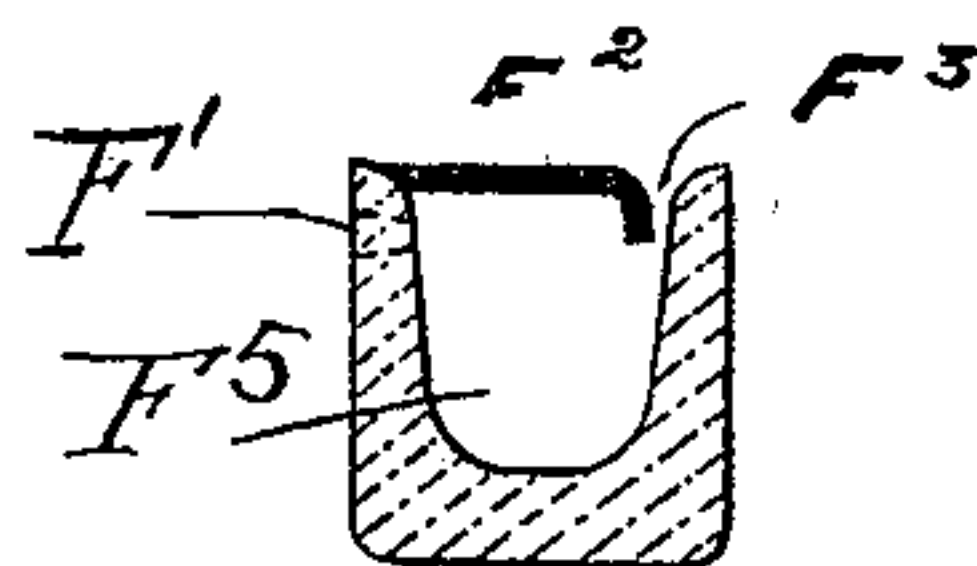


FIG. 4.



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FIG. 5.

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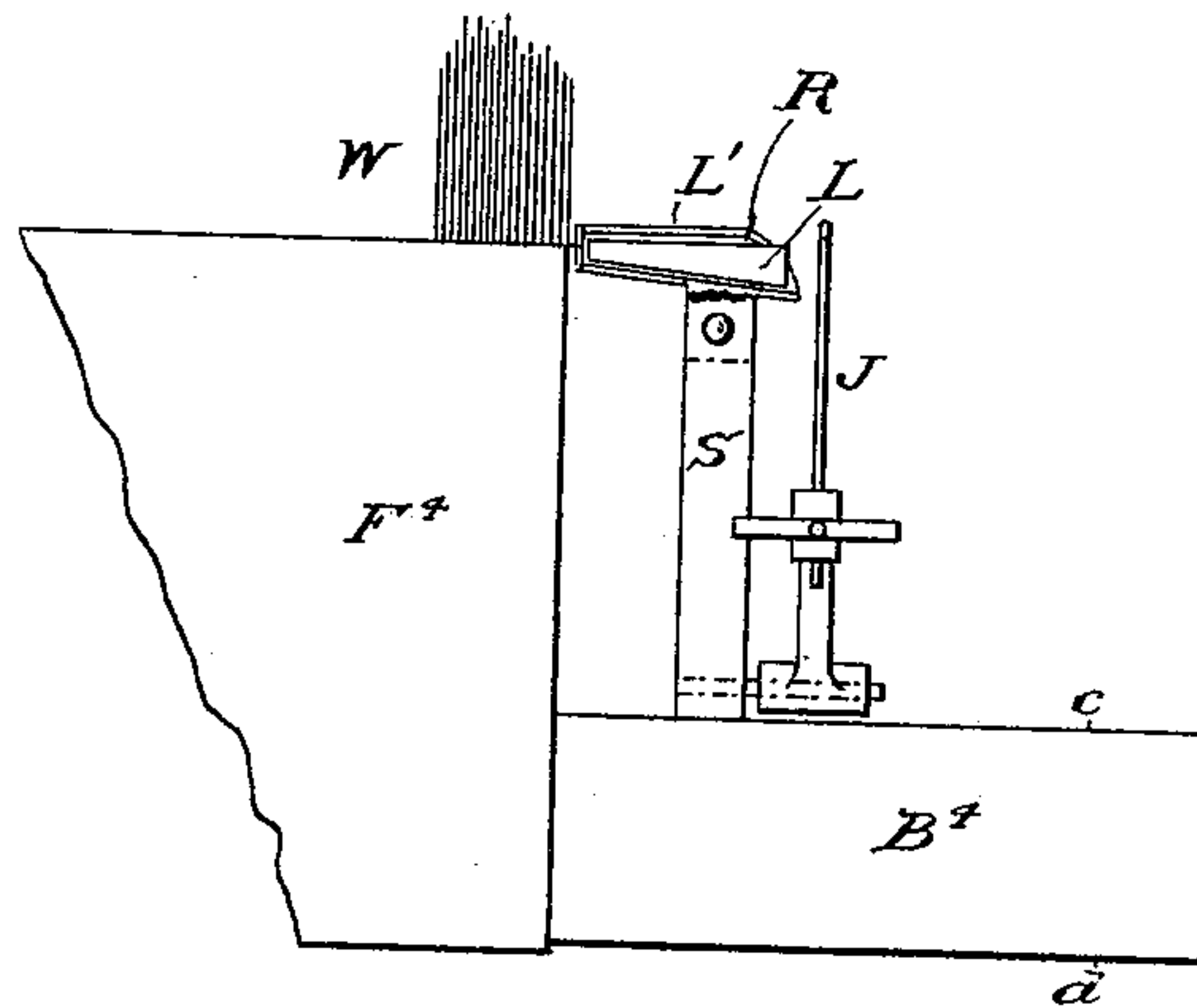


FIG. 6.

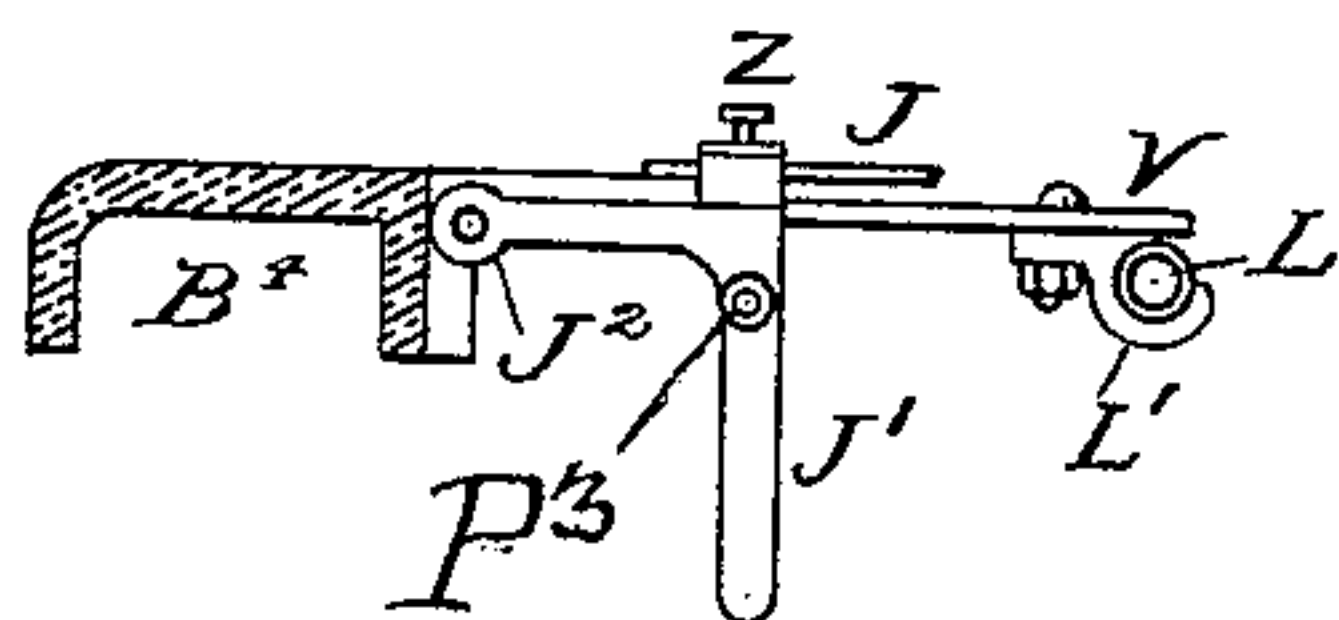


FIG. 7.

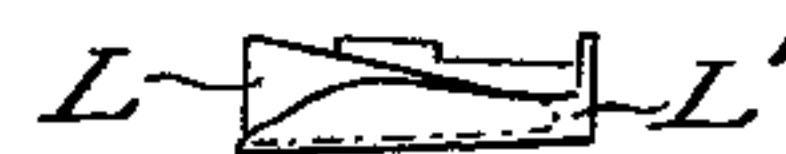


FIG. 8.

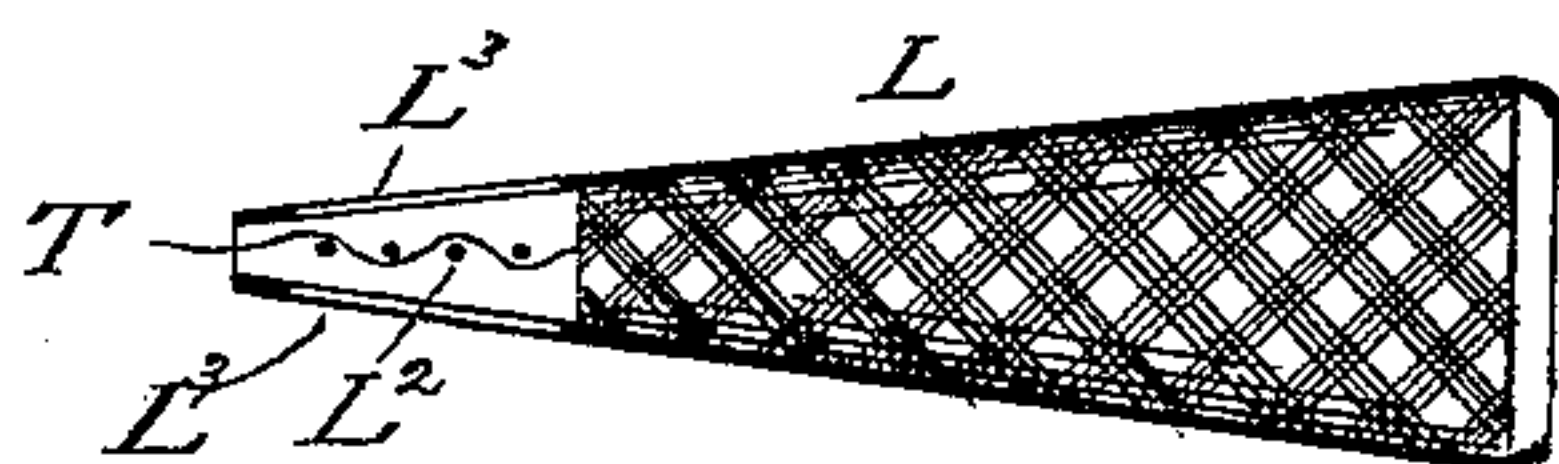


FIG. 9.

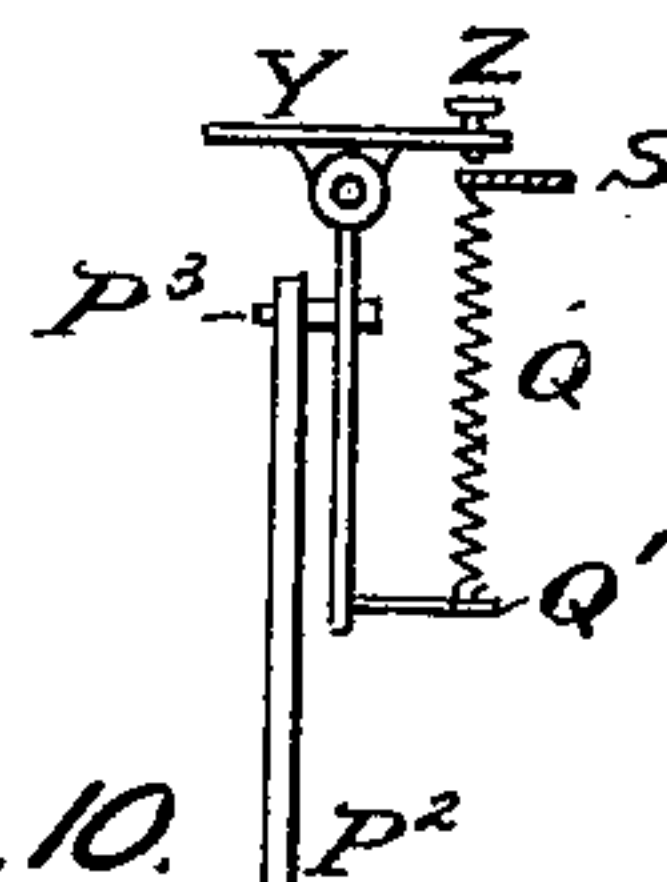


FIG. 10.

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6 Sheets—Sheet 4.

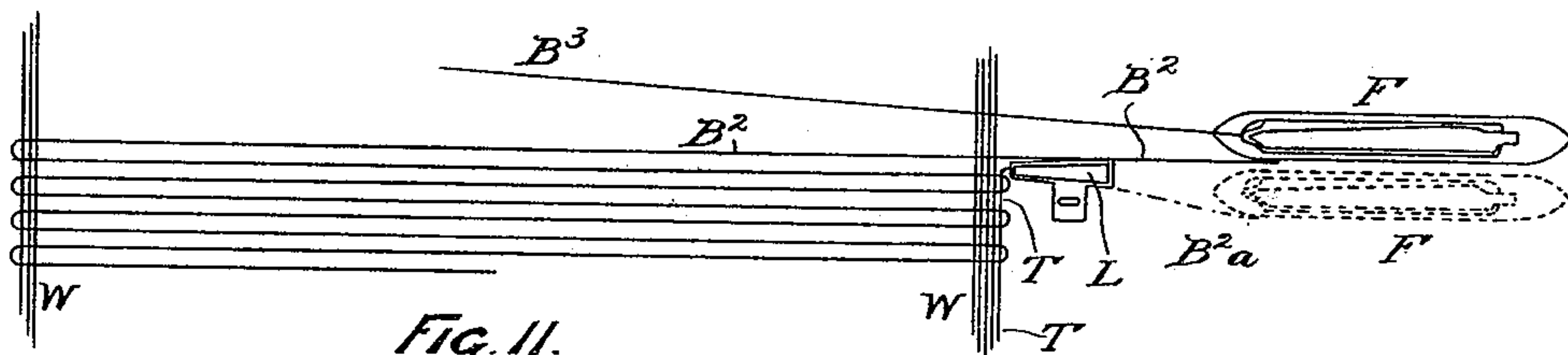


Fig. 11.

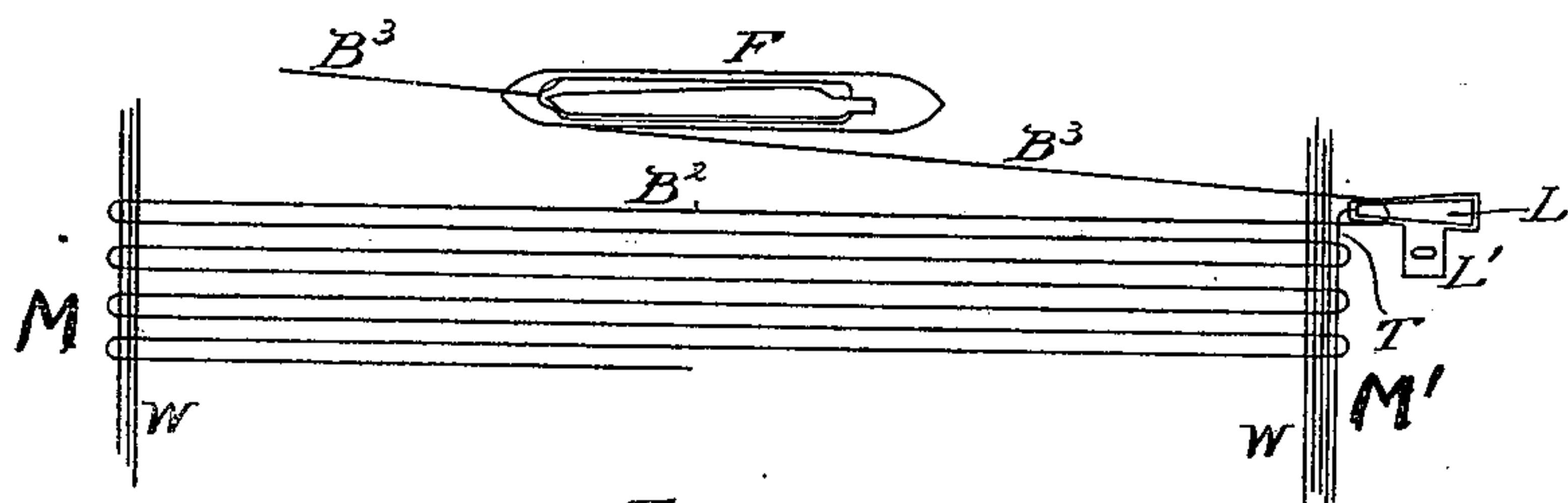


Fig. 12.

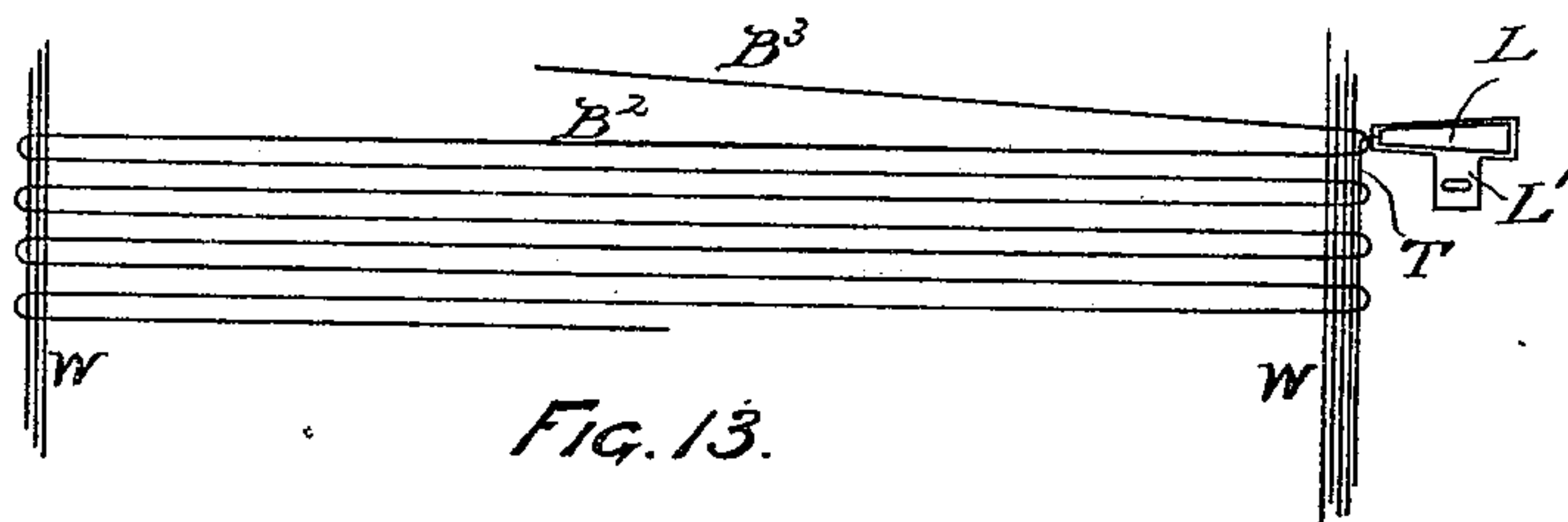


Fig. 13.

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6 Sheets—Sheet 5.

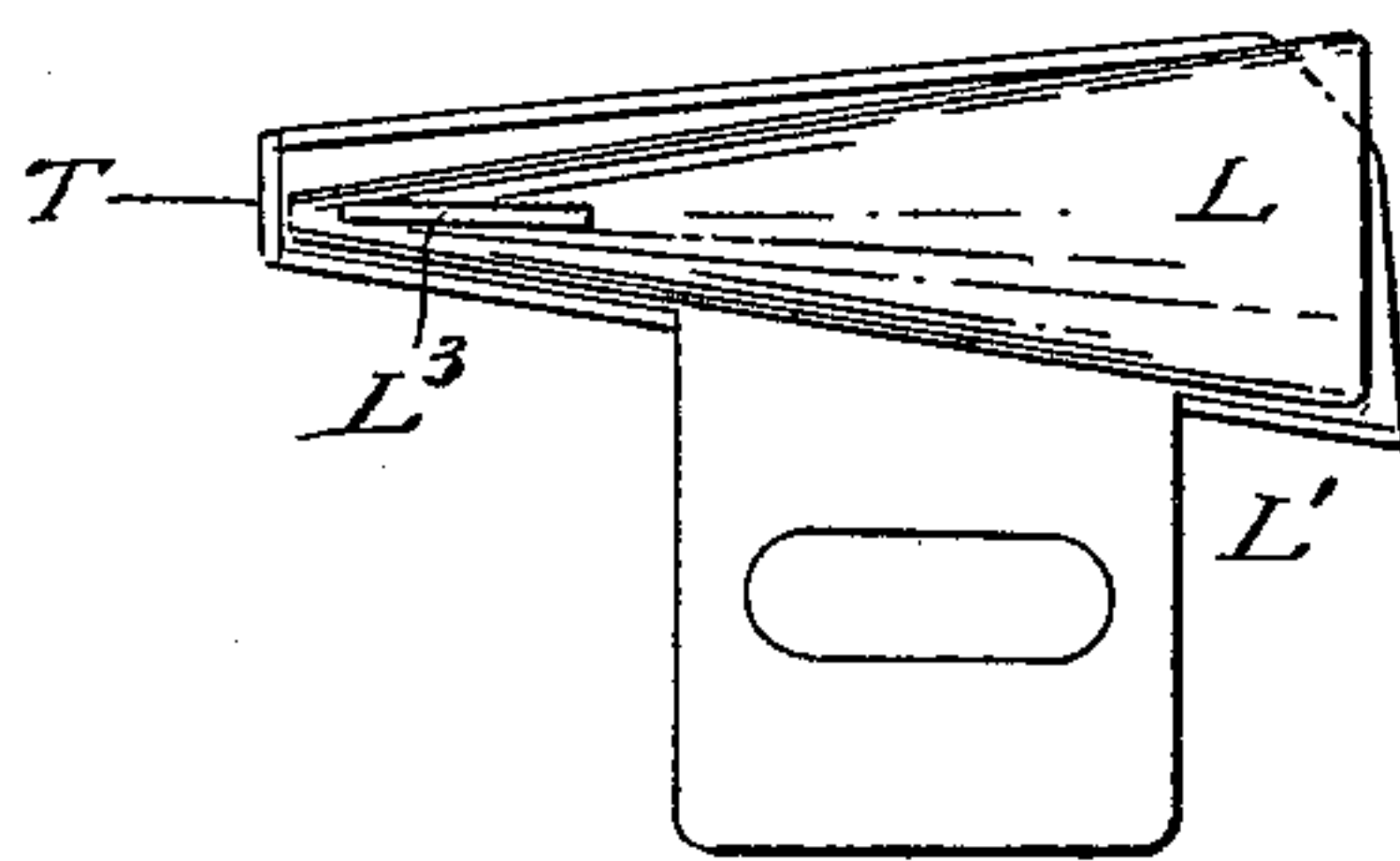


Fig. 14.

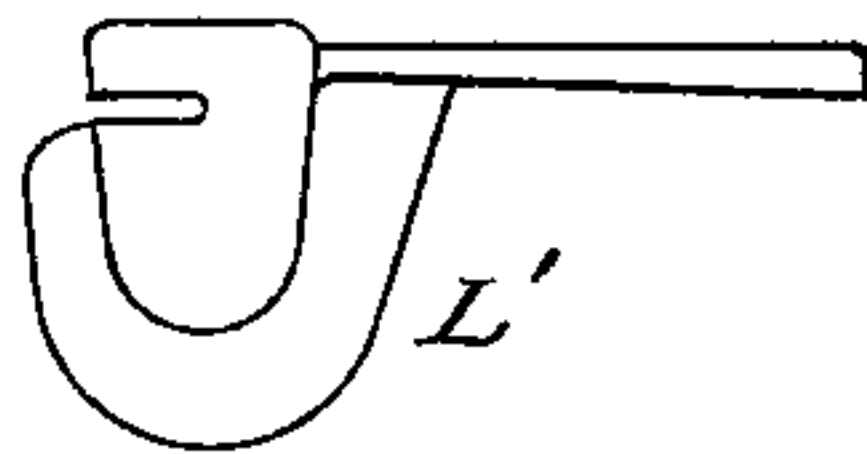


Fig. 15.

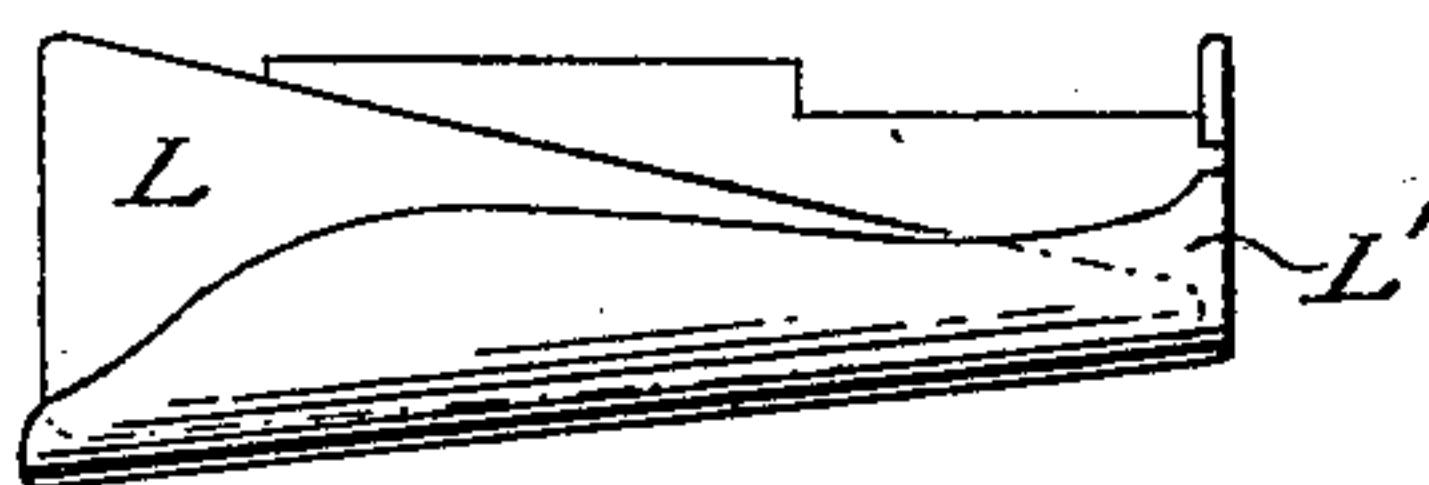


Fig. 16.

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6 Sheets—Sheet 6.

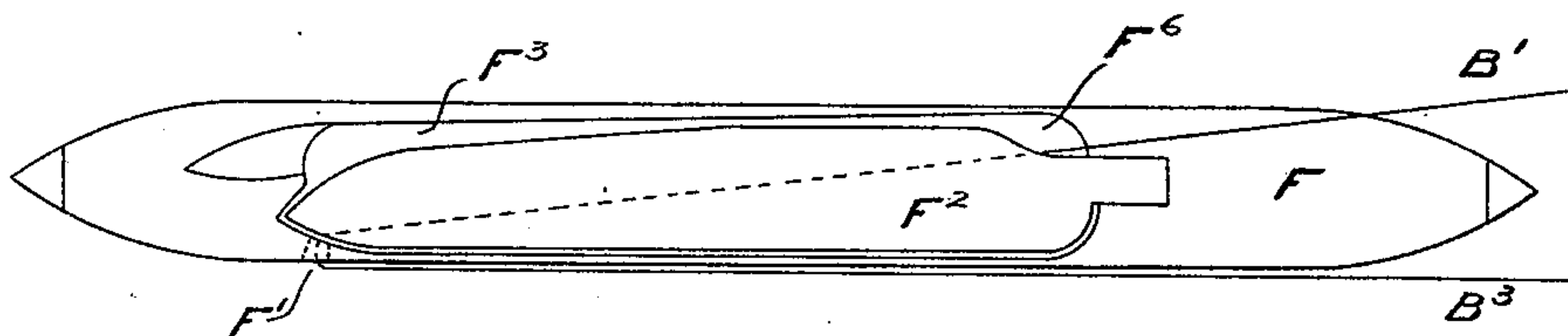


Fig. 17.

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UNITED STATES PATENT OFFICE.

EDWARD SMITH, OF BRADFORD, ENGLAND.

APPARATUS FOR WEAVING FABRICS.

SPECIFICATION forming part of Letters Patent No. 635,198, dated October 17, 1899.

Application filed August 31, 1897. Serial No. 650,181. (No model.)

To all whom it may concern:

Be it known that I, EDWARD SMITH, a subject of the Queen of Great Britain and Ireland, residing at Bradford, in the county of York, England, have invented certain Improvements in Apparatus for Weaving Fabrics, of which the following is a specification.

The object of this invention is to arrange weaving-loom in a manner that the ordinary lay-beam and picking mechanism may be utilized and the weft drawn from a large bobbin, cop, or ball placed upon a center peg or spindle mounted on the loom in any convenient position, so as to be enabled to draw weft therefrom and distribute it across the fabric in such a manner so as to weave a longer length of fabric without having occasion to stop the loom for the purpose of replenishing the supply of weft to the shuttle or carrier used for distributing the weft across the fabric; also, to secure the weft in a manner to form a fast selvage on each edge of the fabric as it is woven without the aid of scissors or other cutting instruments hitherto used for severing the weft on one or both edges of the fabric prior to forming the selvage when weaving from a bobbin, cop, or ball of weft that is not carried across the loom by a shuttle.

In describing my invention in detail reference is made to the accompanying sheet of drawings, in which—

Figure 1 represents a plan of the frame and lathe of a loom with my improvements added. The other portions of the loom, which are ordinary and well known and not affected by my invention, are omitted. Fig. 2 is a section through line *a b* on Fig. 1. Fig. 3 is a detached detail of a portion of the lathe and reed drawn to a larger scale. Fig. 4 is an enlarged plan view of the shuttle or weft-carrier. Fig. 5 is a cross-section through same; Fig. 6, a detached plan view showing a portion of the fabric, breast-beam, conical tube and holder, and depressing-finger. Fig. 7 is a section through line *c d* of Fig. 6; Fig. 8, an end view of the conical-tube holder and tube supported thereby. Fig. 9 is an enlarged sectional elevation of the conical tube slotted near to one end and filled with a cop of thread. Fig. 10 is a detached detail showing the position of the spring placed for the purpose of effecting a quick return of the de-

pressing-finger. Fig. 11 is a diagrammatic view of a few warp and weft threads with the shuttle or weft-carrier at the end of its traverse in one direction. Fig. 12 is a diagrammatic view showing the shuttle returning from the right to the left hand shuttle-box and the weft-thread sliding over the conical tube. Fig. 13 is a diagrammatic view showing the weft-thread wrapped around the conical-tube thread preparatory to making the selvage fast. Fig. 14 is an enlarged plan view of the conical tube lying in and supported by the holder. Fig. 15 is an end view of the holder, and Fig. 16 an elevation of the rear side of the holder and conical tube. Fig. 17 is a plan view of the weft-carrier, showing the position of the weft-threads when the carrier is in the shuttle-box at the left side of the loom.

In carrying out my invention the lathe A, picking-motions, shafts, healds, and other parts common to looms as ordinarily constructed are operated in the usual manner.

The means for supplying the weft is outside of the shuttle and comprises the bobbin, cop, or ball of weft B, from which the supply is obtained, mounted upon a spindle supported by a bracket C, attached to one of the end frames D of the loom. The weft-thread B' after leaving the bobbin, cop, or ball is supported by an eyelet-guide E, placed between said bobbin, cop, or ball and the lathe A.

Secured to the lathe A and parallel to the reed G is a plate H, having a slot-hole H' cut therein, (see Fig. 3,) through which the weft B' is conducted to the shuttle or weft-carrier F, by which it is distributed through the eye F', (shown by dotted lines in Fig. 4 and cross-section Fig. 5,) the said figures also showing the cover-plate F², which may be secured to the block of the shuttle or weft-carrier in any convenient manner, a slot-hole or space being left clear of the shuttle or weft-carrier block on one side at F³ for allowing free movement to the weft B' when the shuttle or weft-carrier is entering or leaving the box K, the cover-plate F² allowing any slack weft to enter into the cavity F⁵ and preventing the weft rising out of the said cavity and coming in contact with the picker when in the box K.

When the shuttle or weft-carrier F is in box K, the eye F' is near the out end of the

lay, so that there is a long distance between the eye F' and the slot-hole H' , through which the weft is drawn from the ball or cop B' , such a position of the shuttle being indicated
 5 in Fig. 17, and if there were no cavity F^5 and a cover over same the weft would lie on the top of shuttle unprotected, so that when the shuttle was picked the long length of unprotected weft would become slack and to
 10 some extent fly upward, thus endangering it being caught by, say, the strap of the picking-motion, thereby breaking the weft. By making a cavity F^5 and covering same with a plate F^2 some portion of the weft is protected,
 15 and the liability of the weft flying upward when the shuttle is struck is reduced.

When the shuttle or weft-carrier F is struck by the picking motion from the box K at one end of the lathe A to the box K' at the opposite end, a double thread or loop of weft is delivered across the open shed of the warp W and laid somewhat in the form or direction as shown by lines B^2 and B^3 , the thread of weft B^2 being fast to the fabric F^4 at the
 25 selvage M , the other portion of the weft or thread B^3 passing through the eye F' of the carrier F across the open shed and through the before-mentioned slot-hole H' to the bobbin, cop, or ball of weft B .

30 During the time the shuttle or weft-carrier F is in the right-hand box K' and before there is any closing or other alteration in the shedding of the warp-threads W the lathe A is moved forward and the two portions B^2 and
 35 B^3 of the weft looped through the shuttle-carrier F are beaten up by the reed G , and during the time the lathe A is moving toward the breast-beam B^4 at the front of the loom for beating up the weft-threads B^2 and B^3 a depressing-finger J , operated in a manner as here-
 40 in after described, is caused to descend and press the weft-thread B^2 into the space R on the side between the fixed trough-shaped tube-holder L' and the conical tube L , where the
 45 weft-thread is held for a short time, and by the continued movement of the lathe A in a forward direction until the reed G beats the weft-threads B^2 and B^3 for the first time the shuttle or weft-carrier F will then be in the
 50 position shown by dotted lines in Fig. 11—that is, in front of the conical tube L —and the weft-thread B^2 will by the forward movement of the said shuttle have been drawn under the conical tube L , which is circular, and passed
 55 to the position shown by dotted lines B^{2a} in Fig. 11, where it is held by the tension of the said weft-thread until the lathe A begins to move backward, by the action of which the weft-thread B^2 is pulled over the circular
 60 conical tube L to the top side of same. Thus by these means the weft-thread B^2 is passed around the conical tube lying free in the stationary holder L' . The trough-shaped holder L' opens upwardly, and the arm J places
 65 the weft in position by a downward movement. On the lathe A arriving at the backward extremity of its movement and before

there is an alteration in the warp-shed the shuttle or weft-carrier F is projected from box K' across the warp-threads W to box K , and
 70 by the flight of the said shuttle or weft-carrier the weft-thread B^2 , already passed from one side of the conical tube L to the other, will be drawn along the conical tube L in the direction shown by Fig. 12, and by the time
 75 the shuttle or weft-carrier F arrives in the box K the weft B^2 will have passed over the small end of conical tube L and looped itself around the conical-tube thread T extending
 80 tight against the selvage, as in Fig. 13, when the shuttle or weft-carrier arrives in box K . Then the two weft-threads B^2 and B^3 are beat up a second time and secured by the shedding
 85 of the warp-threads, after which the shuttle or weft-carrier is again thrown across from box K to box K' and the operation repeated.

The weft-thread B^2 B^3 in a looped condition drawn from cop B or the like is thrown across the warp-shed every time the shuttle or weft-
 90 carrier is driven from box K to K' . The threads are then beat up by the reed G and the thread B^2 passed around the conical tube L and thread T before any change is made in the shedding of the warp-threads W , and on
 95 the retreat of the shuttle or weft-carrier F across the shed the looped weft B^2 is drawn tight against the selvage M' , the weft-thread B^3 sliding through the eye F' of the shuttle or weft-carrier F when the latter is retreat-
 100 ing from box K' to K , and on the arrival of the said shuttle in box K the warp-threads are operated in the ordinary manner for binding the weft and locking the selvage.

The conical tube L is hollow and supported
 105 by a holder L' , secured to a plate S , attached to the breast-beam of the loom. A projecting bar V passes over the top of the conical tube, but clear thereof, for the purpose of preventing the said tube being knocked up-
 110 ward and dislodgment of same by the shocks and vibrations of the loom.

The hollow conical tube L is fitted with a cop of thread. The end of the thread T is passed around one or more small bars L^2 op-
 115 posite the slot-holes L^3 near the small end of the tube arranged for the purpose of facilitating the threading. These bars L^2 are for obtaining the necessary tension on the thread T required in the formation of the selvage M' .
 120

The before-mentioned finger J is operated at each alternate pick of the shuttle or weft-carrier F —that is, immediately after the said shuttle is driven into the box K' —the downward operation of the said finger being ef-
 125 fected by a small projection N , secured on the rotating shaft O of the loom through the lever P , fulcrumed at P' and rod P^2 , the latter engaging with a pin P^3 , secured to the bell-cranked lever J' , suspended by a pin at J^2 .
 130 Attached to the bell-cranked lever is a cross-piece Y , provided with an adjusting-screw Z , the end of which on the downward movement of the rod P^2 comes in contact with plate

S, thus preventing the downward movement of the finger J more than is required.

5 The finger J is secured to the bell-cranked lever J', and on the before-mentioned projection N raising the end of the lever P the rod P² and finger J are depressed, the outward end of the finger to such an extent that the weft-thread B² is inserted into the space between the holder L² and conical tube L,
10 where it is held until the retreat of the lathe A and wrapped around the said tube and thread T in the manner as before described; the necessary quick return motion of the finger J being assisted by the contraction of the
15 spiral spring Q, (shown by Fig. 10,) which is connected to a stud Q' on bell-cranked lever J' and rigid plate S, to which the conical-tube holder L' is secured.

What I claim as my invention is—

20 In combination with the lay of a loom, a

weft-carrier F', for drawing in the weft from an outside source and distributing it across the fabric, such carrier having a free space F⁵ within it for the collection of slack weft, an eye F' and a cover-plate F² extending from 25 one side, leaving space F³ on the other side connecting with the space F⁵, and a hollow tube containing a cop of thread arranged with its axis transversely to the warp-threads, for engaging with and retaining the weft delivered by the carrier F, substantially in the 30 manner as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD SMITH.

Witnesses:

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WM. ILLINGWORTH, Jr.