

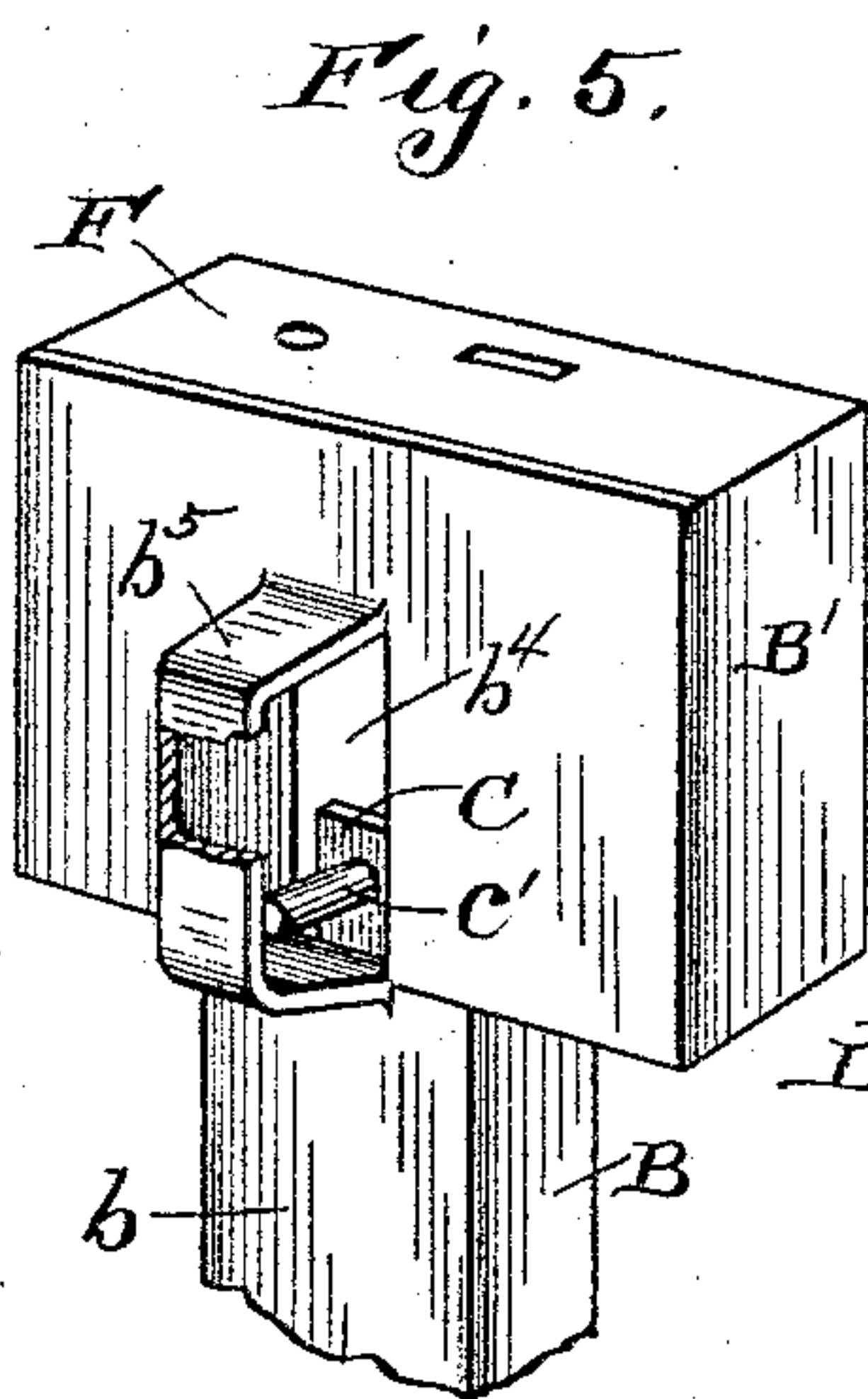
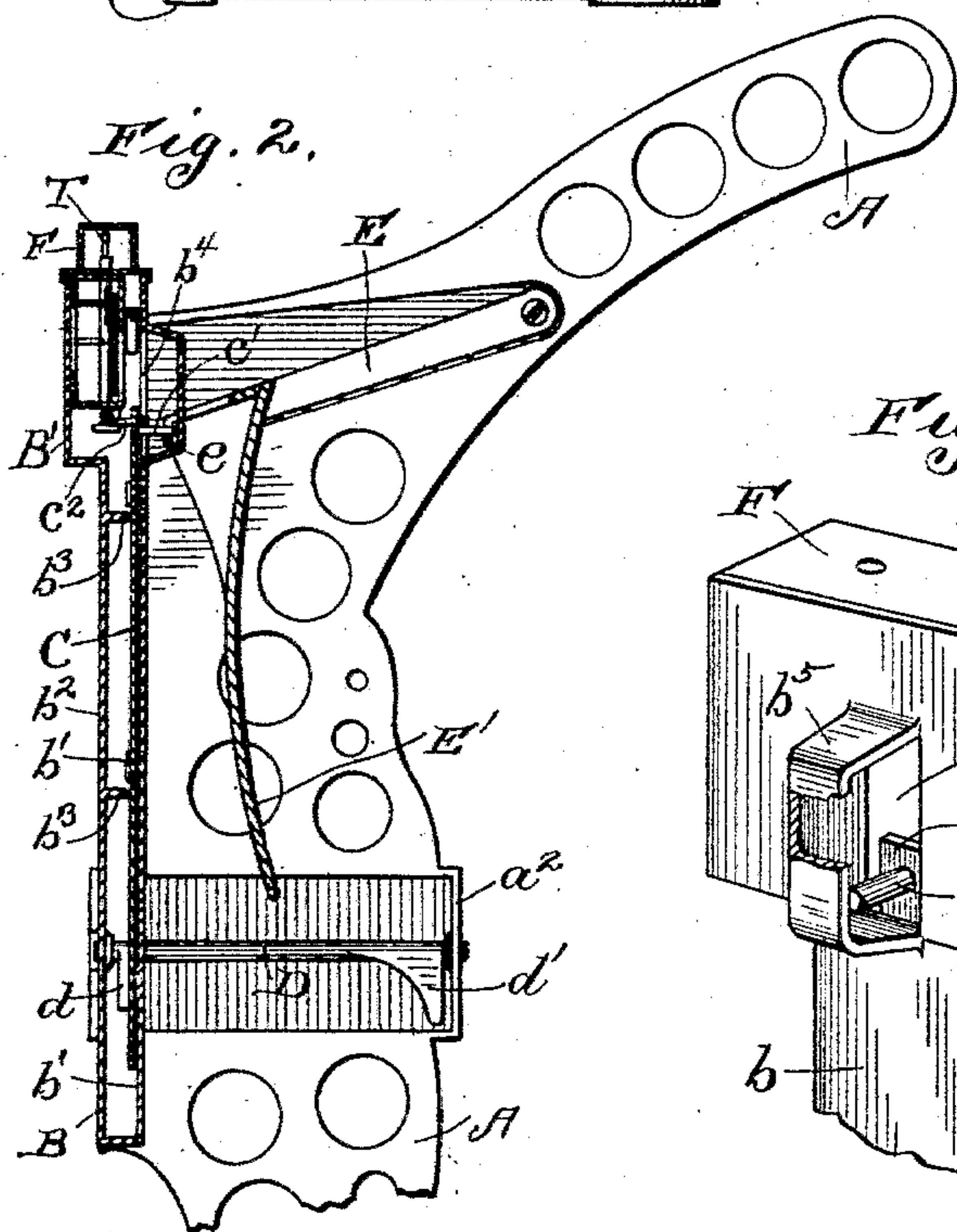
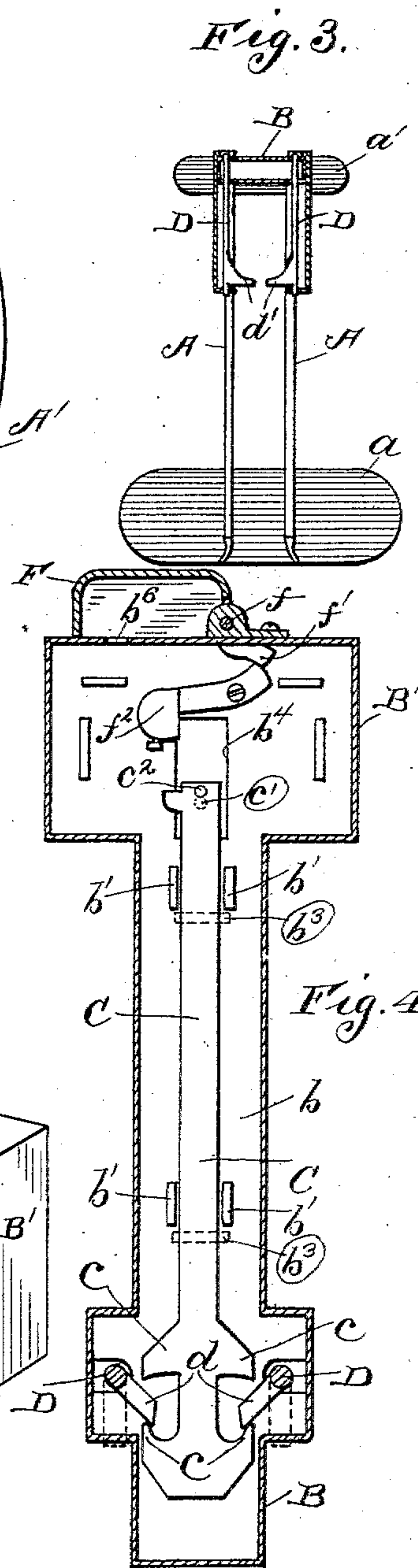
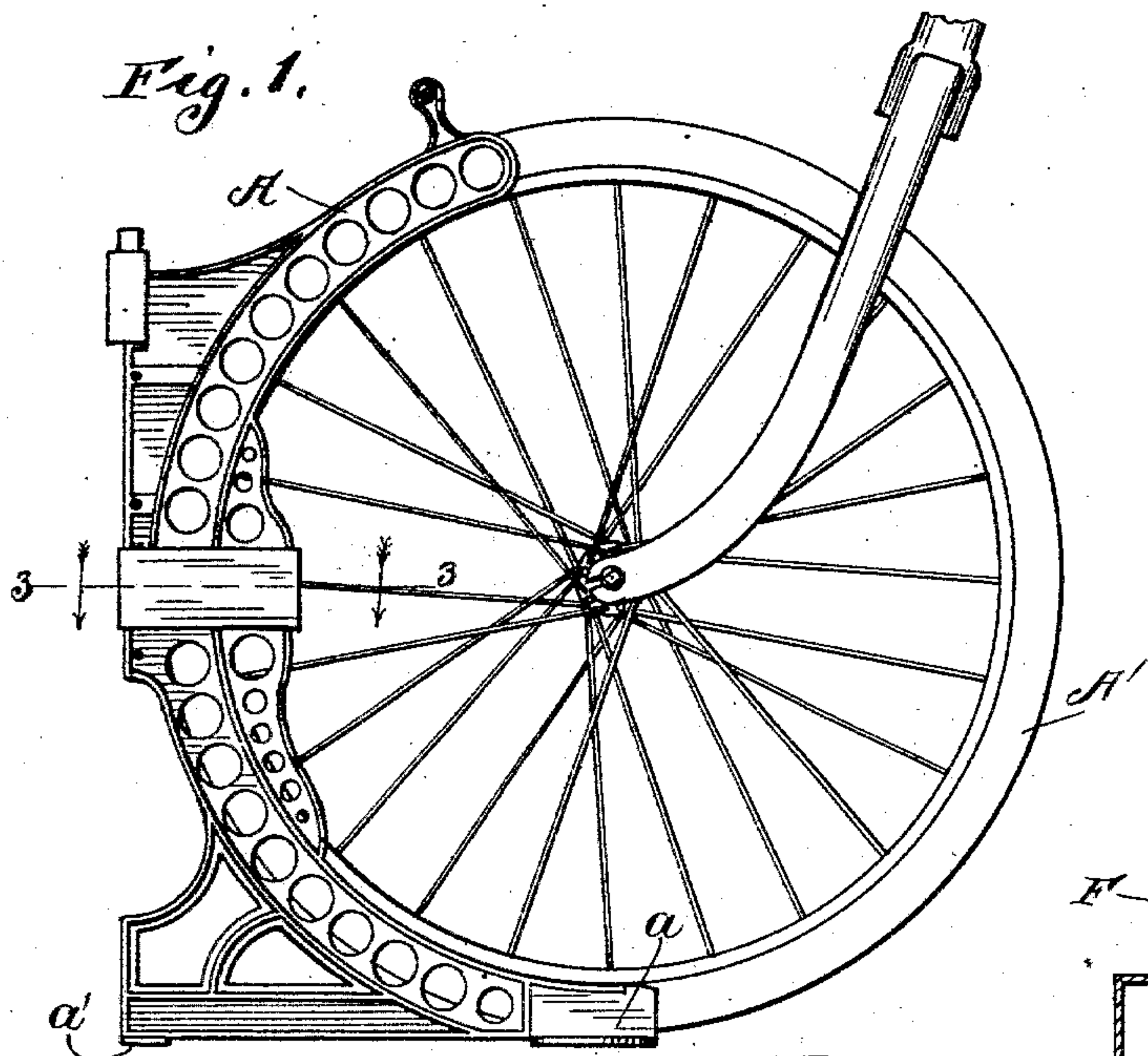
(No Model.)

4 Sheets—Sheet 1.

H. WESTPHAL.
RACK OR STAND FOR BICYCLES.

No. 565,058.

Patented Aug. 4, 1896.



Witnesses:
R. J. Jaeger.
E. A. Duggan.

Inventor:
Henry Westphal
By Chas. C. Gillman atty

(No Model.)

4 Sheets—Sheet 2.

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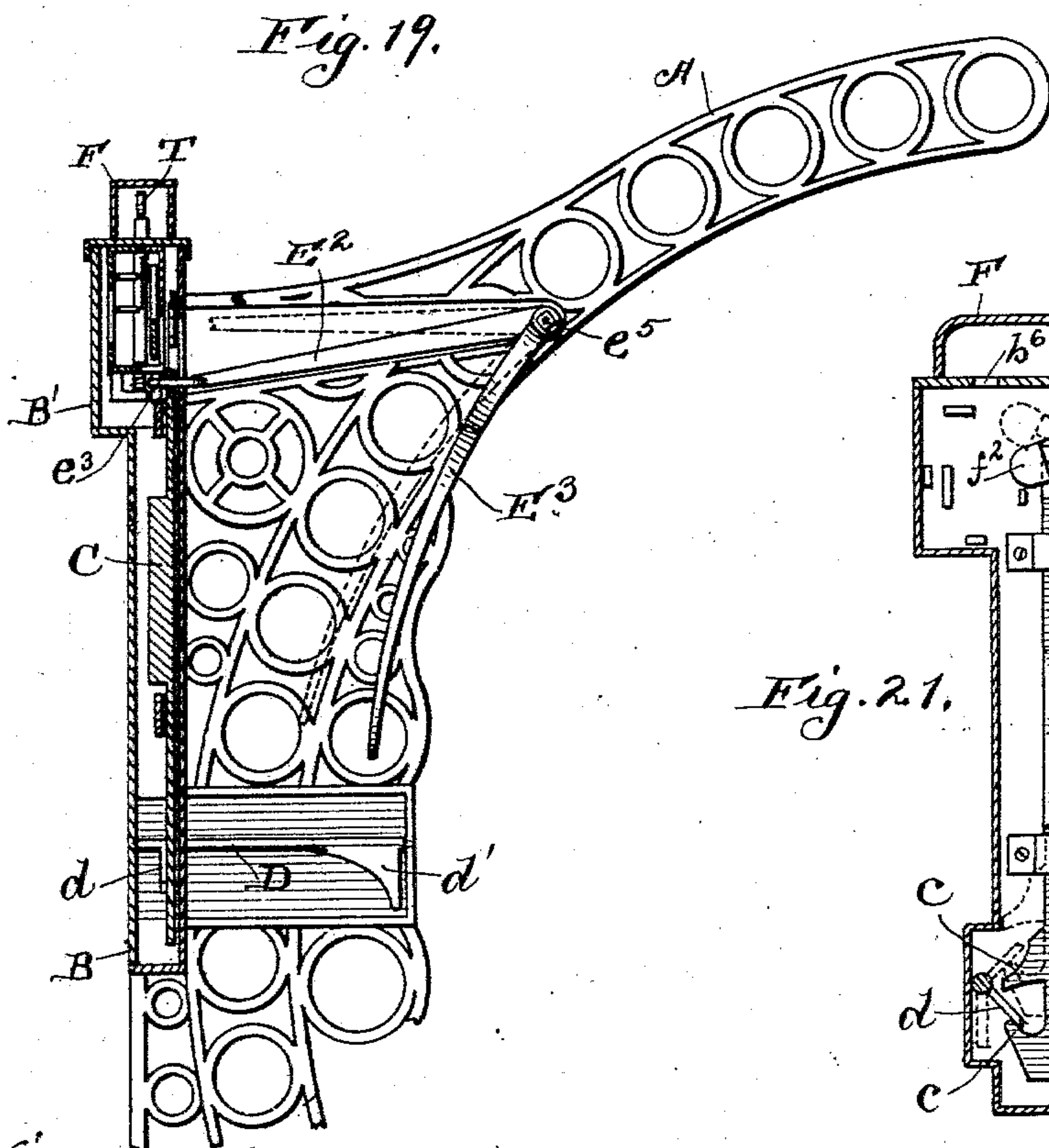
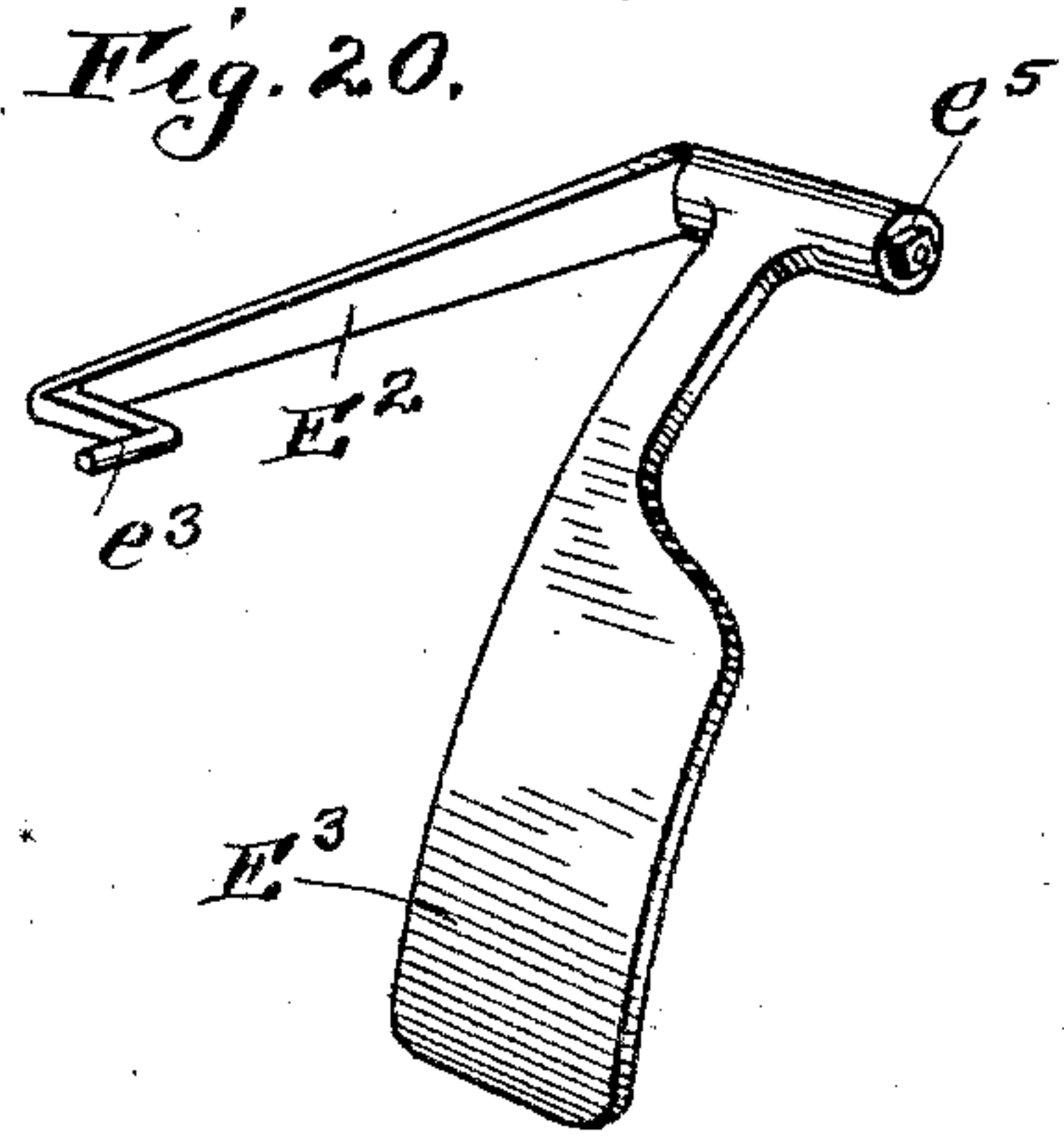
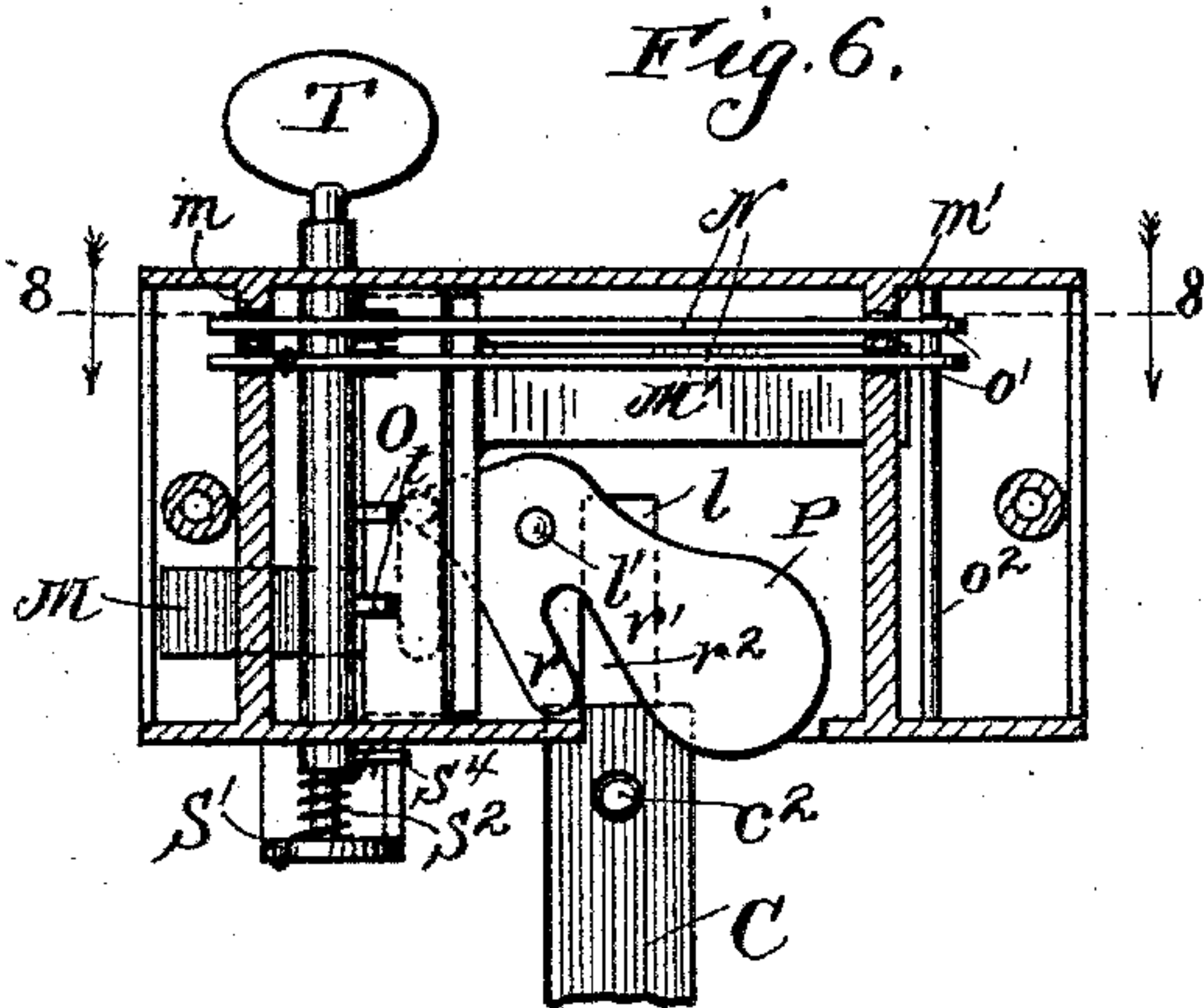
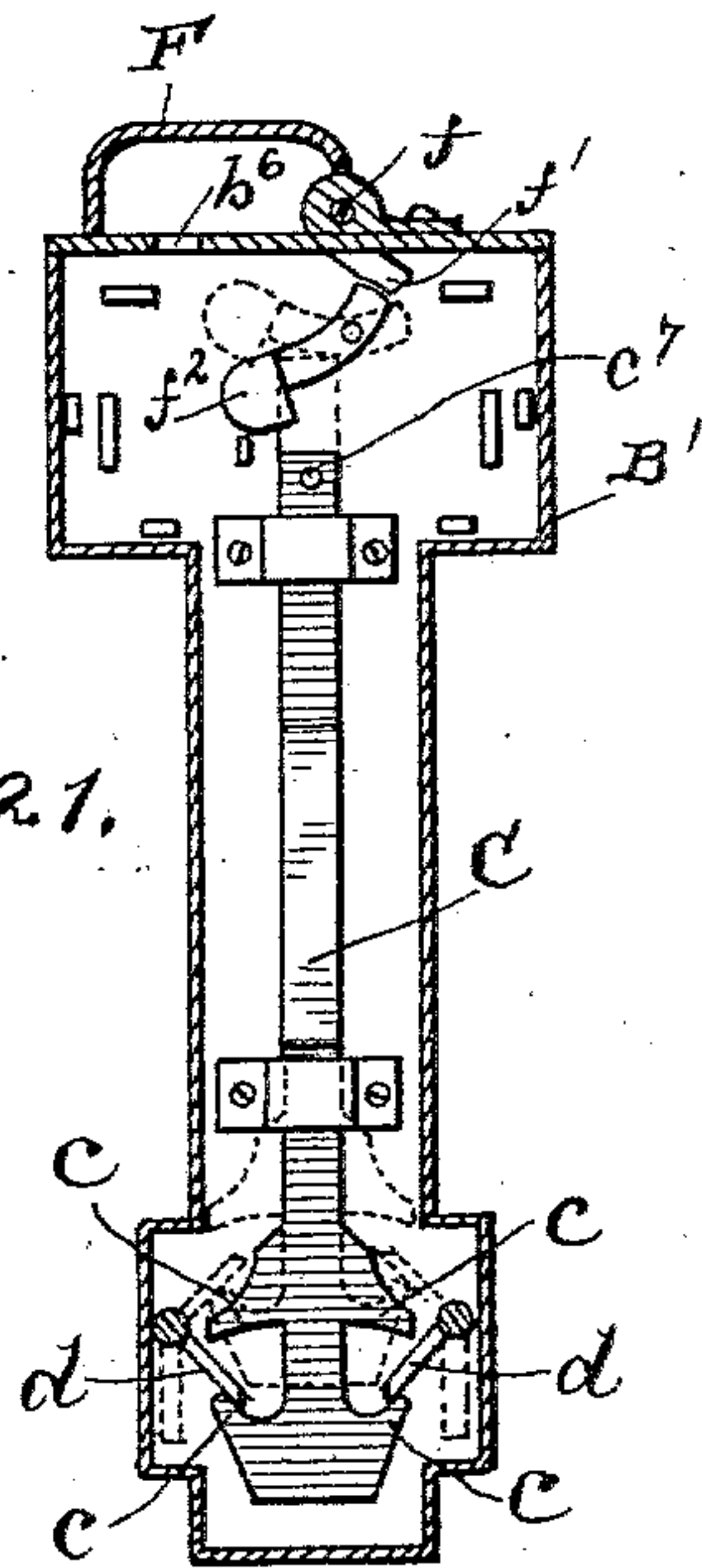


Fig. 21.



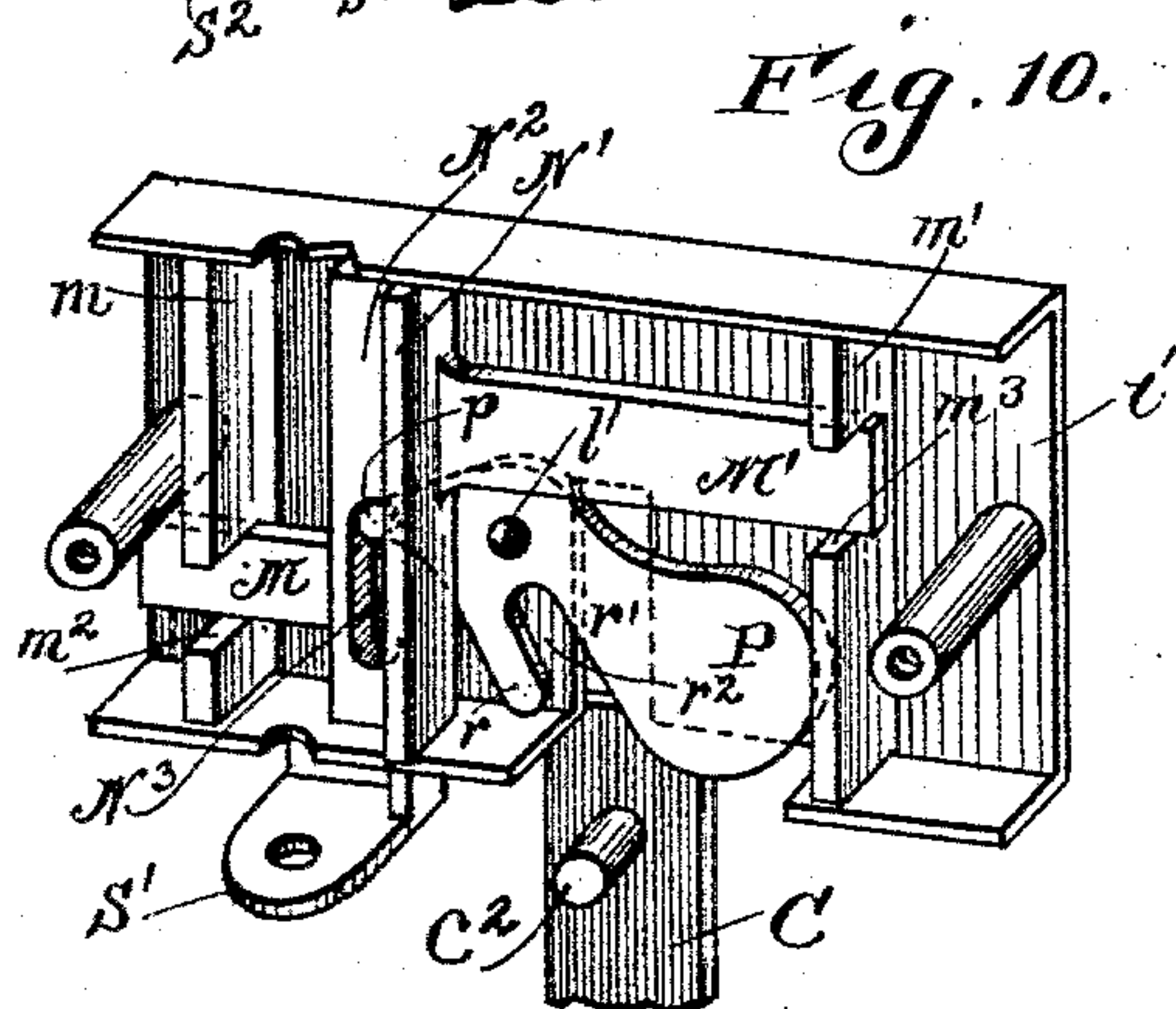
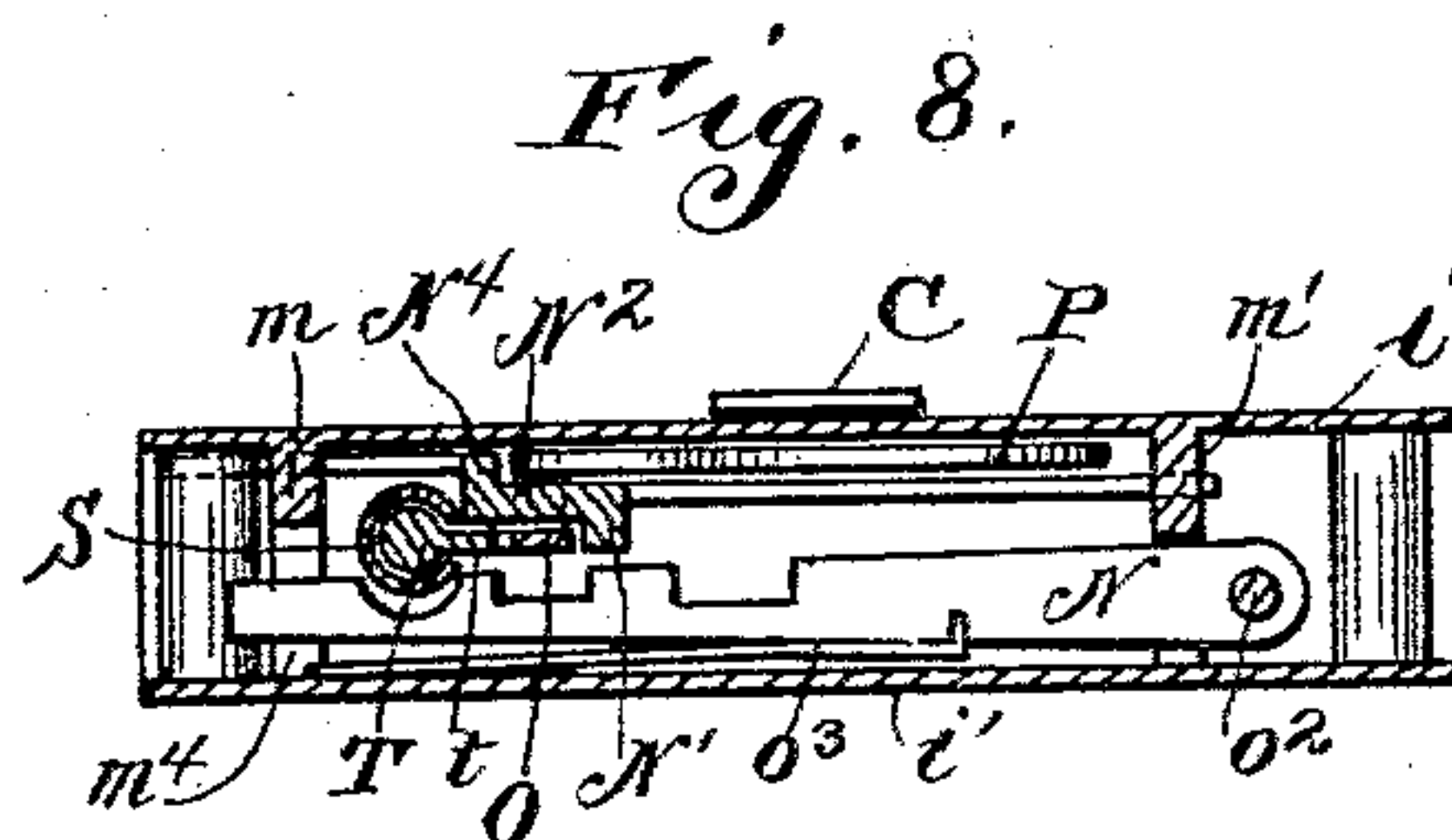
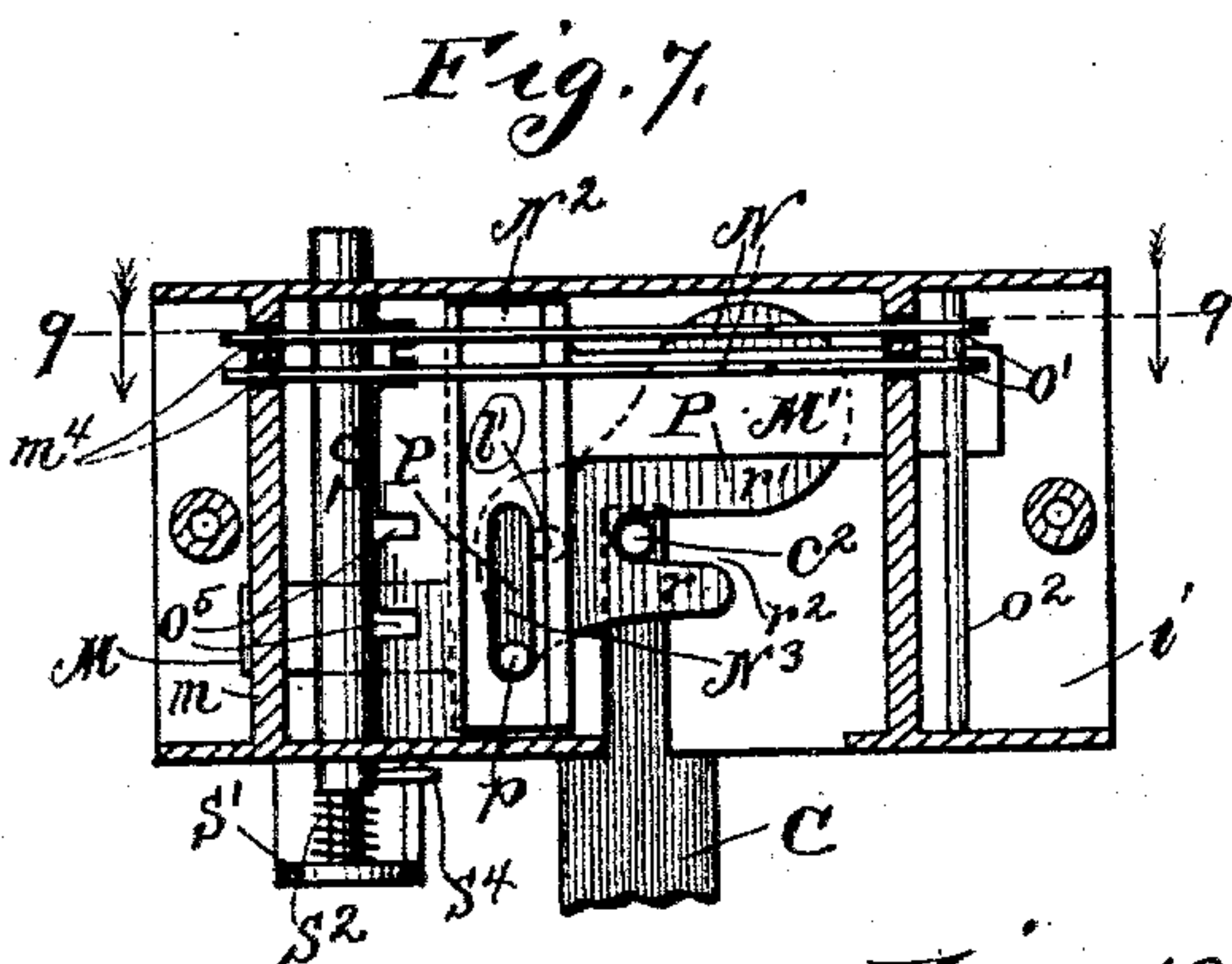
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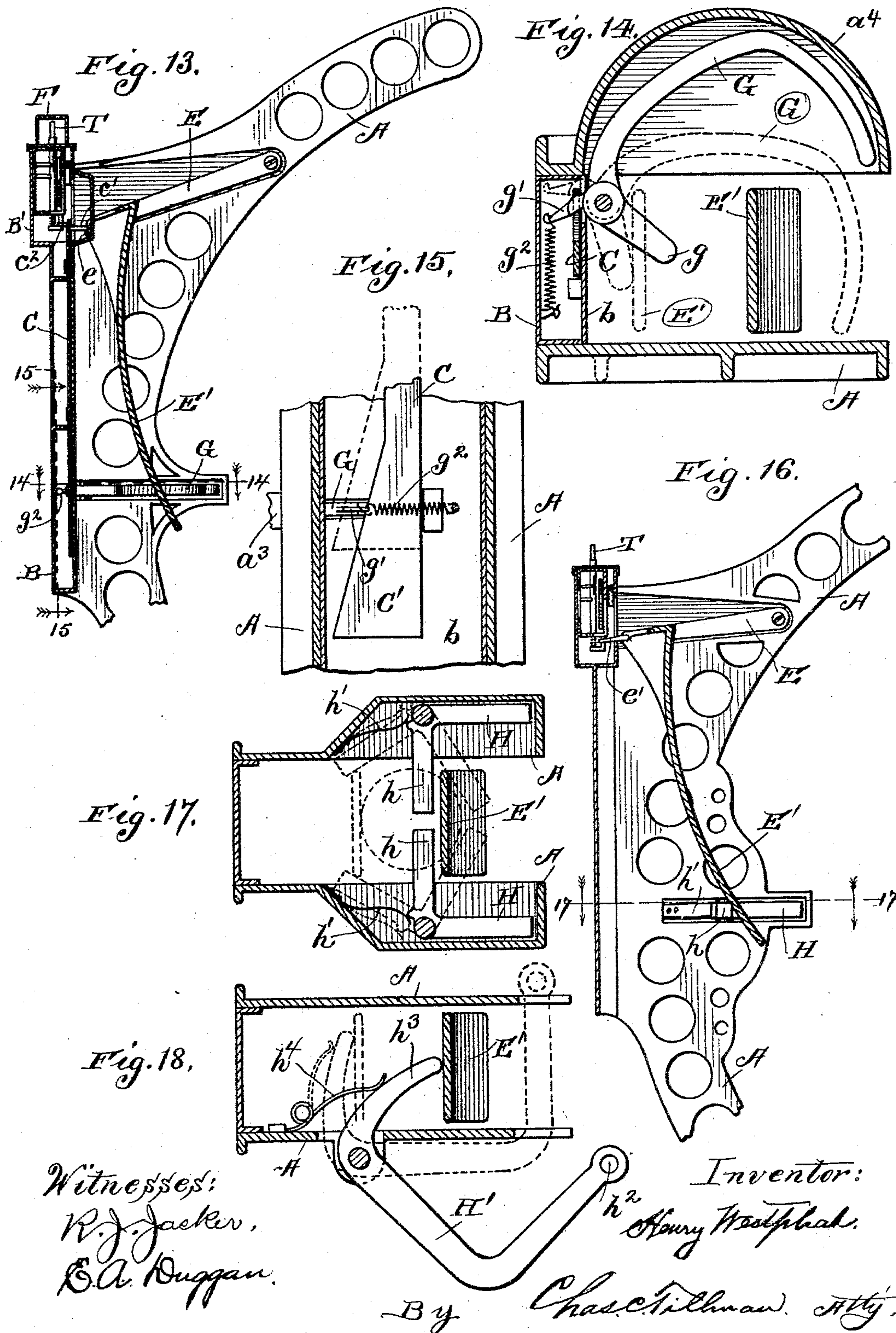
(No Model.)

4 Sheets—Sheet 4.

H. WESTPHAL.
RACK OR STAND FOR BICYCLES.

No. 565,058.

Patented Aug. 4, 1896.



UNITED STATES PATENT OFFICE.

HENRY WESTPHAL, OF CHICAGO, ILLINOIS.

RACK OR STAND FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 565,058, dated August 4, 1896.

Application filed September 14, 1895. Serial No. 562,509. (No model.)

To all whom it may concern:

Be it known that I, HENRY WESTPHAL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Racks or Stands for Bicycles, of which the following is a specification.

This invention relates to improvements in racks or stands to be used for supporting and locking bicycles in an upright position; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The objects of my invention are, first, to provide a rack for bicycles in which the wheel shall be automatically locked and securely held in an upright position, and, second, such a rack which is so constructed that it may be placed on the floor or ground or may be secured to a wall or other suitable support, so as to retain the bicycle in a standing or upright position.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a view in side elevation of my rack or stand as it appears when designed to be placed on the floor or ground, showing the front wheel of a bicycle locked therein. Fig. 2 is a central vertical sectional view of the upper portion of the rack, showing the operating mechanism thereof. Fig. 3 is a plan sectional view taken on line 3 3 of Fig. 1, looking in the direction of the arrows. Fig. 4 is a rear vertical sectional view of the front part of the upper portion of the casing or frame. Fig. 5 is a front perspective view of a portion of the upper part of the casing. Fig. 6 is a view in side elevation of the lock which I prefer to use in my rack with one of the plates of the casing removed, showing the key locked in. Fig. 7 is a similar view showing the position of the parts of the lock when the key is removed. Fig. 8 is a plan sectional view taken on line 8 8 of Fig. 6. Fig. 9 is a like view taken on line 9 9 of Fig. 7. Fig. 10 is a perspective view with one of the plates of the casing, the key-guide, stay, and tum-

blers removed and showing a portion of the operating-bar in position to lift or operate the weighted cam of the lock. Fig. 11 is a plan view of a portion of the top of the casing, showing the keyhole therein. Fig. 12 is a perspective view of the operating-lever detached from the rack. Fig. 13 is a central sectional view of the upper portion of the rack or stand, showing a modification in the construction of the operating-bar and securing device for the wheel. Fig. 14 is a plan sectional view taken on line 14 14 of Fig. 13. Fig. 15 is a vertical sectional view of a part of the rear portion of the casing or frame, taken on line 15 15 of Fig. 13, showing the change in the shape of the operating-bar when designed to operate the securing device, such as is shown in Fig. 14. Fig. 16 is a central vertical sectional view of the upper part of the rack or stand, showing a modification in which the sliding bar is omitted and another form of securing device for the wheel is employed. Fig. 17 is a plan sectional view taken on line 17 17 of Fig. 16. Fig. 18 is a plan sectional view taken through that portion of the stand in which the securing device for the wheel is located and showing still another modification in the construction and operation of said device. Fig. 19 is a central vertical sectional view of the upper portion of the rack or stand, showing still another modification in the manner of operating the securing devices for the wheel. Fig. 20 is a detail perspective view of the operating-lever employed in said modification; and Fig. 21 is a rear vertical sectional view of the upper portion of the casing or frame, illustrating the mechanism employed in the last-named modification.

In my application for Letters Patent for improvement in bicycle-racks filed the 9th day of September, 1895, Serial No. 561,894, I have shown and claimed a rack in which the operating-bar and securing-latches for the wheel are raised by the weight of the wheel, said operating-bar being liberated so as to allow it to be raised by the forward pressure of the wheel. In the present application the securing device for the wheel is placed in engagement therewith by the forward pressure of the wheel, and said securing device is retained in engagement with the wheel by means of a

lock. The locking mechanism which I prefer to use is fully described and claimed in Letters Patent No. 532,506, issued to me on the 15th day of January, A. D. 1895, and is also fully shown and described in the above-named application, to wit: Serial No. 561,894.

In the present application I have shown a stand or rack which is removable or designed to be placed on the ground or floor, but it is apparent that the same may be secured to a wall or other support at a suitable height to receive the wheel, when the lower portion of the framework may be dispensed with.

Like letters refer to corresponding parts throughout the different views of the drawings.

A represents the side pieces of the main or supporting frame, and are preferably made semicircular in form, as shown in Fig. 1 of the drawings, so as to encircle about one-half of the felly of the wheel. These pieces are secured parallel with one another and a slight distance apart, as shown in Fig. 3, to admit of the insertion therebetween of one of the wheels A' of the bicycle. When designed for a movable stand, as shown in Figs. 1 and 3, they are provided with front and rear base, pieces *a* and *a'*, respectively, but if to be secured to a wall or support said pieces and the part below the securing device for the wheel may be omitted. At and to the rear of the side pieces A, and forming a part of the frame or rack, is a casing B for the operating mechanism, the rear surface of the front plate *b* thereof being provided with lugs *b'*, which act as guides for the sliding bar C, which bar is movably held between said lugs by means of the rear plate *b²* of the casing, which may be provided with inwardly-extending lugs *b³*. The lower portion of the sliding bar C is provided with catches *c* to engage arms *d* on the securing devices or latches D, which latches have their bearings for their inner ends in the casing B, and extend in parallelism forwardly. The front portions of the securing devices D are provided with arms *d'*, which normally depend within the boxes *a²*, in which the front ends of said latches have their bearings. These boxes are made without perforations and are for the purpose of protecting the latches. The upper end of the sliding bar C is provided with pins or projections *c'* and *c²*, the former of which is adapted to engage the operating-lever E and the latter a locking mechanism which is located in the enlargement or box B' of the casing or frame, and the construction and operation of which will be presently explained. The pin *c'* extends forwardly through an opening *b⁴* in the face of the casing, and the pin *c²* extends rearwardly, as is clearly seen in Fig. 2 of the drawings.

Around the opening *b⁴* in the front of the box B' may be placed a cover *b⁵*, with one of its sides removed for the reception and operation of the laterally-extending finger or projection *e* on the operating-lever E, which

lever is fulcrumed at a suitable point to one of the side pieces A of the main frame, and has a downwardly-extended portion E', the free end of which is located near the securing devices D and a short distance from the face-plate of the casing. The finger *e* of the operating-lever engages the pin *c'* on the sliding bar C and lifts the same when the wheel of the bicycle is pressed against the end of the portion E' of the operating-lever, as will be hereinafter more fully explained.

The top of the box B' is provided with an opening *b⁶* for the insertion of the key T to the locking mechanism located within said box. On the upper surface of the box B' is a cover F, which is pivotally secured to the box by means of a pivot-pin *f* to allow said cover to be raised or lowered over the keyhole *b⁶* and to protect the key from removal when the same is locked therein. The pivoted portion of the cover F is formed with a rigid arm *f'*, which extends into the box B' and engages a weighted dog *f²*, which is pivoted to the rear surface of the face-plate of the casing and normally engages, as shown in Fig. 4 of the drawings, the arm *f'* on the cover F, and thus prevents said cover being raised, except when it is desired to remove the key, which may be done by raising the bar C to the position shown by dotted lines in Fig. 21 of the drawings, when the weighted lever will be disengaged from the arm *f'* and the cover F be free to be lifted to allow the removal of the key to the locking mechanism within the casing, which lock consists of two plates *i i'*, the plate *i* being formed with a vertical slot *l* near its middle, which extends through the bottom of the casing, as shown, and having on its inner surface close to each of its ends the ribs *m m'*, both of which are formed with openings or recesses *m² m³*, in which the sliding bolts M M' operate, and are thereby guided in their backward and forward movements. The opening or recess *m²* is formed near the lower portion of the rib *m*, and the opening or recess *m³* near the upper end of the rib *m'*. Near their upper portions, and on their surfaces adjacent to the plate *i*, each of the ribs *m* and *m'* are formed with recesses or mortises *m⁴* for the reception and operation of the spring-actuated tumblers N, which are formed with recesses *nn'*, the former of which engages with the stay O and the latter with the sliding rib or bead N' on the piece N², which unites the sliding bolts M and M', and is preferably formed in cross-section, as shown in Figs. 8 and 9, with two projections N' and N⁴ at its edges extending in opposite directions, the flat piece N² being provided near its lower portion with a vertical slot N³, in which fits and operates a pin or lug *p* on the bifurcated cam P, which cam is pivotally secured to the plate *i* at a suitable point near the outer portion of the slot *l* therein, as shown at *l'*. This cam is made, as clearly shown in Figs. 6, 7, and 10, with two prongs *r r'*, which form an open slot or

fork r^2 , into which will engage the lug or pin c^2 on the bar c .

As shown in Figs. 6, 7, and 8, the tumblers N are pivotally secured, as at o' , on the rod o^2 , having its bearings in the top and bottom of the casing near the farther end from the key-guide, and are provided with springs o^3 , which are interposed between the tumblers and the plate i' , and that they will be thus forced forward to engage with the bead or rib N' on the sliding piece N^2 .

Near the rib m the casing is provided in its top and bottom with suitable circular openings a , through which is passed a split tube or key-guide S , which has its bearings for its lower end in the depending bracket S' on the bottom of the lock-casing. The lower end of the key-guide S is provided with a spring s^2 , which serves to revolve the key-guide till the split therein through which the projections t on the key T passes to engage with the tumblers into alinement with the openings a^3 therefor in the top of the casing, and is prevented from turning the guide too far by means of the lug or pin s^4 , secured thereto, which is so placed that it will strike the bracket S' , which acts as a check.

The stay O , which is provided with a number of recesses o^5 to correspond with the number of projections t on the key T , is rigidly secured in a vertical position, and longitudinally with the lock-casing, between the bead N' and the key-guide, and between the tumblers and the piece N^2 . This stay is employed to regulate the combination of the lock, for it is obvious that the projections t on the key must correspond in number and dimensions with the recesses in the stay. Otherwise they would not pass through the same.

It is evident that the projection c^2 on the bar C will extend into the slot l of the plate i of the lock and will engage with the open slot r^2 or fork between the prongs r and r' on the cam P , when the upward movement of the operating-bar C , provided, as before stated, with the projection c^2 , engaging with the prongs r and r' , will cause the cam P to be raised to the position indicated in Fig. 7, the movement of which cam, by means of its pin p , operating in the slot N^3 of the plate N^2 , will cause the sliding bolts M M' and the bead N' , which are connected to the plate N^2 or made integral therewith, to be retracted to the position shown in Fig. 7, which operation removes the plate N^2 from interference with the projections on the shank of the key, and thus permits the key-guide S to be partially revolved by means of the spring s^2 till the projections of the key are in alinement with the opening a^3 in the top of the casing, when, and not before, the key may be withdrawn, and the operating-bar C will be securely locked in said position by reason of the engagement of the tumbler N with the bead N' . In order to release or unlock the operating-lever E or bar C , it will be necessary to replace the key in the key-guide,

when by turning the same its projections will engage the tumblers and will free them from engagement with the bead N' , when, by reason of the weight of the bar C and cam P , they will be lowered, as shown in Fig. 6, which operation will interpose the plate N^2 between the projections on the key-shank and the opening a^3 in the top of the casing, and prevent the key being removed.

In Figs. 13 to 15, inclusive, I have shown a modification in the construction, arrangement, and operation of the securing device for the wheel, which consists in pivotally securing on the rack-frame, near the casing thereof, a curved piece G , which may normally lie within a circular box or receptacle a^4 in one of the side pieces of the main frame, as shown in Fig. 14. The secured portion of the piece G is formed or provided with two arms g and g' , the former of which extends between the side pieces of the frame and some distance in front of the casing, while the latter passes through an opening in the front plate b , into the casing B , and has secured to its end a spring g^2 , which is fastened at its other end to the casing and retracts the piece G to the position shown by continuous lines in Fig. 14. When using the curved piece G as a securing device for the wheel, the same construction is employed as above set forth, with the exception that the sliding bar C is formed with an enlarged beveled portion C' , which contacts in its upward movement with the arm g' and holds the piece G in the position indicated by dotted lines in said figure, when it will encircle the felly and firmly hold it in position.

In Figs. 16 and 17 is illustrated another modification in the construction and operation of the securing device for the wheel, which consists in pivotally securing to the side pieces A of the main or supporting frame two rectangular pieces H , the rear arms h of which normally lie crosswise of the opening between the side pieces, and are held in such position by means of springs h' , which are secured at one of their ends to the side pieces A and contact at their other ends with said arms.

In Fig. 18 is illustrated still another modification in the form and operation of the securing device for the wheel, which I may sometimes employ, and consists of a piece H' , substantially U-shaped, having in its outer end an opening h^2 for the reception of a chain or other fastening device. The other end of the piece H' is bent to form an arm h^3 , which extends in between the pieces A and is normally held in the position, as shown by full lines in Fig. 18, by means of a spring h^4 , secured to one of the side pieces, but usually to that one to which the piece H' is pivoted.

In using either of the securing devices illustrated in Fig. 17 and 18, the sliding bar employed in the other above-described constructions is dispensed with and a pin or fin-

ger e' on the operating-lever E engages with the cam of the lock, instead of the pin c^2 , as before.

By reference to Figs. 16 to 18, inclusive, it will be seen and readily understood that the extended portion E' of the operating-lever depends in front of the arms h or h^3 of the securing-pieces, and when pressed by the forward movement of the wheel will force said arms to the position indicated by dotted lines, thus securing the wheel between the side pieces.

Figs. 19 to 21, inclusive, illustrate another modification, which consists mainly in the operating-lever, which, instead of being constructed as shown in Fig. 12, is made in the form of a bell-crank having an arm E^2 , provided with a finger e^3 , which passes through an opening c^7 in the upper end of the sliding bar C, and also engages the cam of the lock, so that said cam and bar may be raised when the wheel is pressed against the deflected arm E^3 of the operating-lever used in this construction, which is fulcrumed, as at e^5 , on the main frame. When this modification is employed, the revolving latches D, engaging with the lower end of the sliding bar, are employed in a like manner, as shown in Figs. 1 to 4, inclusive.

From the foregoing, and by reference to the drawings, it will be seen and clearly understood that in either of the constructions in which the sliding bar is employed the securing devices for the wheel will be placed around the same by the forward pressure thereof against the depending arm of the operating-lever, which operating-lever is thus caused to lift the sliding bar, thereby raising the cam P of the lock to the position shown in Fig. 7, and at the same time throwing the securing devices for the wheel around the felly, in which position the parts will be securely locked. When using the securing devices for the wheel illustrated in Figs. 16 to 18, it is obvious that as the extended portion E' of the operating-lever is pressed rearwardly by the wheel it will force the arms h or h^3 backward, thus throwing the front portion of the devices crosswise the space between the side pieces, in which position they will be held by reason of the operating-lever, which engages through its finger e' with the cam P of the lock, which will be lifted to the position shown in Fig. 7 and there firmly locked.

While I have shown the rack constructed with a pair of latches D for securing the wheel in position, yet I may sometimes omit one of said latches and form the sliding bar C with a catch on one side only, to engage the inner arm d and make the outer arms d' somewhat longer, so as to extend crosswise of the space between the side pieces of the frame.

By reference to the different views of the drawings it will be seen that the supporting or side pieces A of the frame are curvilinear in form and reach to about the top of the

periphery of the wheel, and that said side pieces are of sufficient width to inclose or envelop the felly and tire only; that is, they do not extend far enough to contact with the spokes, thus avoiding any injury to the same.

By extending the side pieces to the top of the wheel, I obtain a much better support, for the reason that the wheel is more easily supported when engaged at its top than at its side portion.

While I prefer to make the side pieces semi-circular and of about the aforesaid dimensions, that is, to envelop the felly and tire only, yet I may make them of any desired form and size, but preferably to engage the wheel at about its top.

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

1. The combination of a rack or stand, with a securing device for the wheel, and a locking mechanism, both located in the stand, and a connection uniting the locking mechanism and securing device adapted to place and fasten the latter in engagement with the wheel by the pressure thereof, substantially as described.

2. The combination with a rack or stand having two parallel side pieces for the support of the wheel, of a pivotal securing device thereon, a locking mechanism on the rack, and a connection uniting the same and said securing device, and adapted to place it crosswise of the space between the side pieces, by the pressure of the wheel, substantially as described.

3. The combination with a rack or stand, of a revoluble securing device thereon for the wheel, a locking mechanism, a sliding bar uniting the same and said device, and a lever fulcrumed in the rack and engaging the bar, and adapted to raise the same and revolve the securing device by the pressure of the wheel, substantially as described.

4. The combination with a rack or stand, having two parallel side pieces for the support of the wheel, of a revoluble securing device, a locking mechanism, a sliding bar uniting the lock and securing device, and a lever engaging the bar and adapted to raise the same and turn the securing device crosswise of the space between the side pieces, by the pressure of the wheel, substantially as described.

5. The combination with a rack or stand, having a casing for the operating mechanism, and an opening in the top of said casing for the insertion of the key to the lock, a cover hinged on the casing over said opening and having an arm extending into the casing, a pivoted dog to engage said arm, a securing device for the wheel, a locking mechanism in the casing, a sliding bar uniting the lock and securing device and adapted to engage the dog and lift the same, and a lever fulcrumed on the rack and engaging the sliding bar and adapted to raise the same, all constructed,

arranged and operating substantially as set forth.

5 6. The combination with a rack or stand having two parallel side pieces for the support of the wheel, of a pair of revoluble latches to secure the wheel, a locking mechanism on the rack, a sliding bar engaging at one of its ends the latches, and at its other end the lock and operating-lever, and said lever fulcrumed in the rack and adapted to raise the sliding bar and revolve the latches by the forward pressure of the wheel, substantially as described.

15 7. In a bicycle rack or stand the combination of a supporting-frame for the wheel, with a revoluble securing device thereon, consisting of the parallel pieces D, provided with the arms or projections d , and d' , a locking mechanism in the frame, the sliding bar C, having at its lower portion the catches c , to engage the arms d , and engaging at its upper part with the lock and operating-lever, and said lever fulcrumed in the frame and adapted to

raise the bar and revolve the pieces by the pressure of the wheel, substantially as described. 25

8. The combination of the casing B', with the covering F, having the arm f' , projecting into the casing, the dog f^2 , pivoted on the casing and adapted to engage said arm, the sliding bar C, and a mechanism to raise the same and cause it to lift the dog, substantially as described. 30

9. The combination with a rack or stand, of a pair of revoluble latches adapted to engage the wheel of a bicycle, a locking mechanism located in the rack, a sliding bar connecting the lock and latches, and means for raising said bar and revolving the latches by the pressure of the wheel, substantially as described. 35 40

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