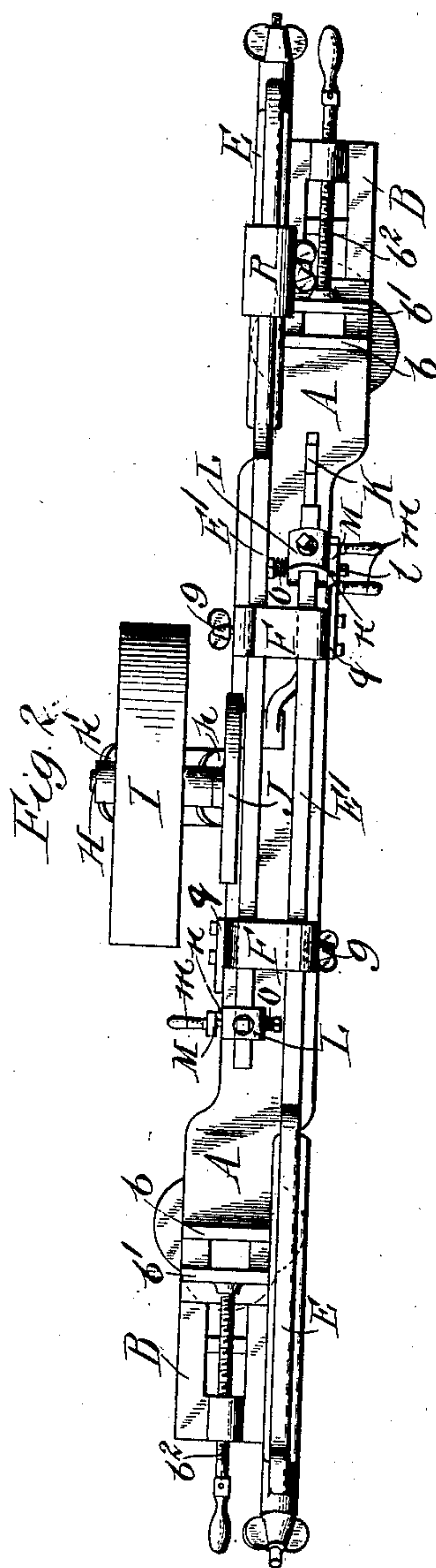
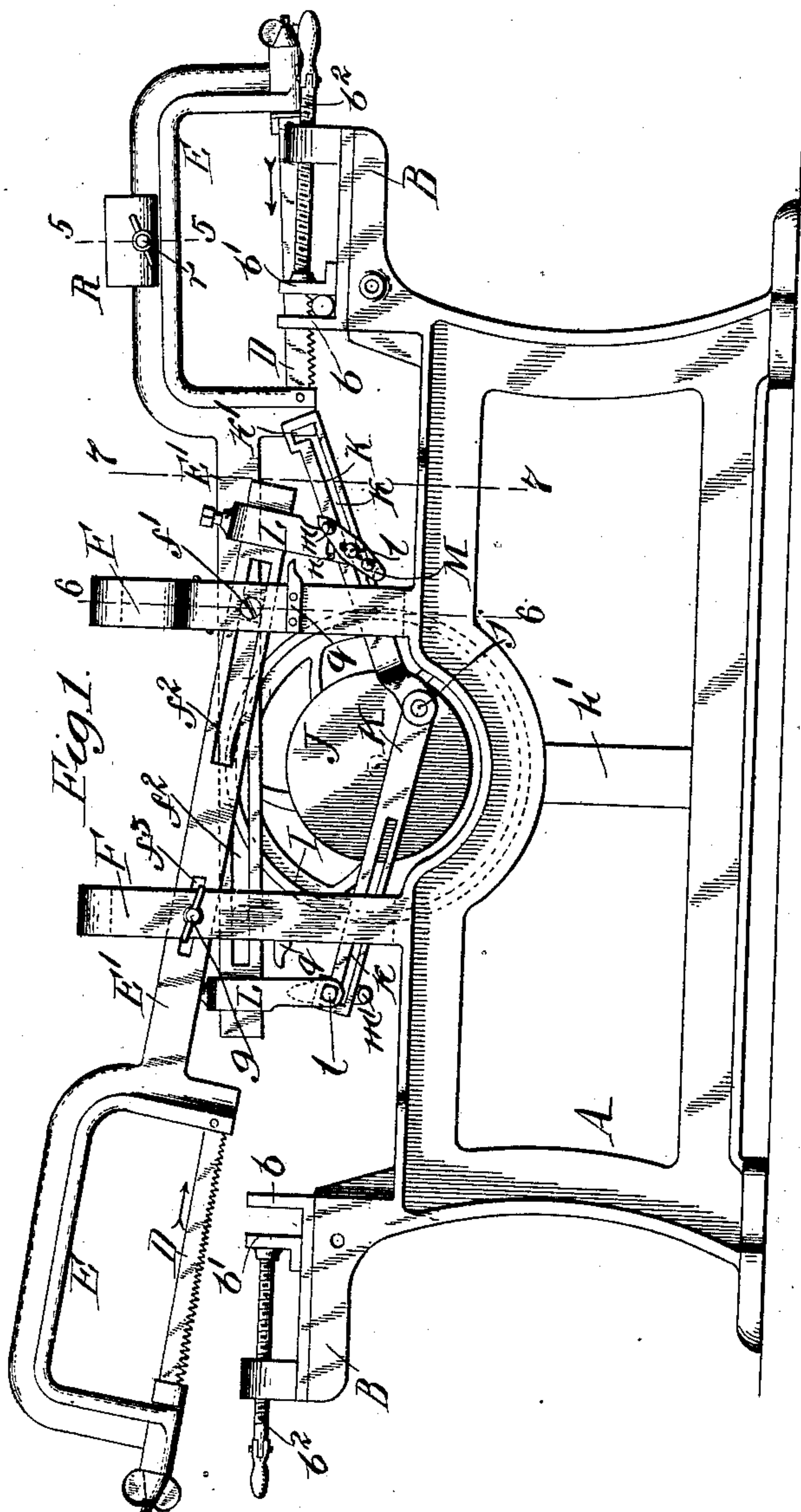


924,767.

A. GRUITSCH.
HACKSAW MACHINE.
APPLICATION FILED AUG. 16, 1907.

Patented June 15, 1909.
2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3.

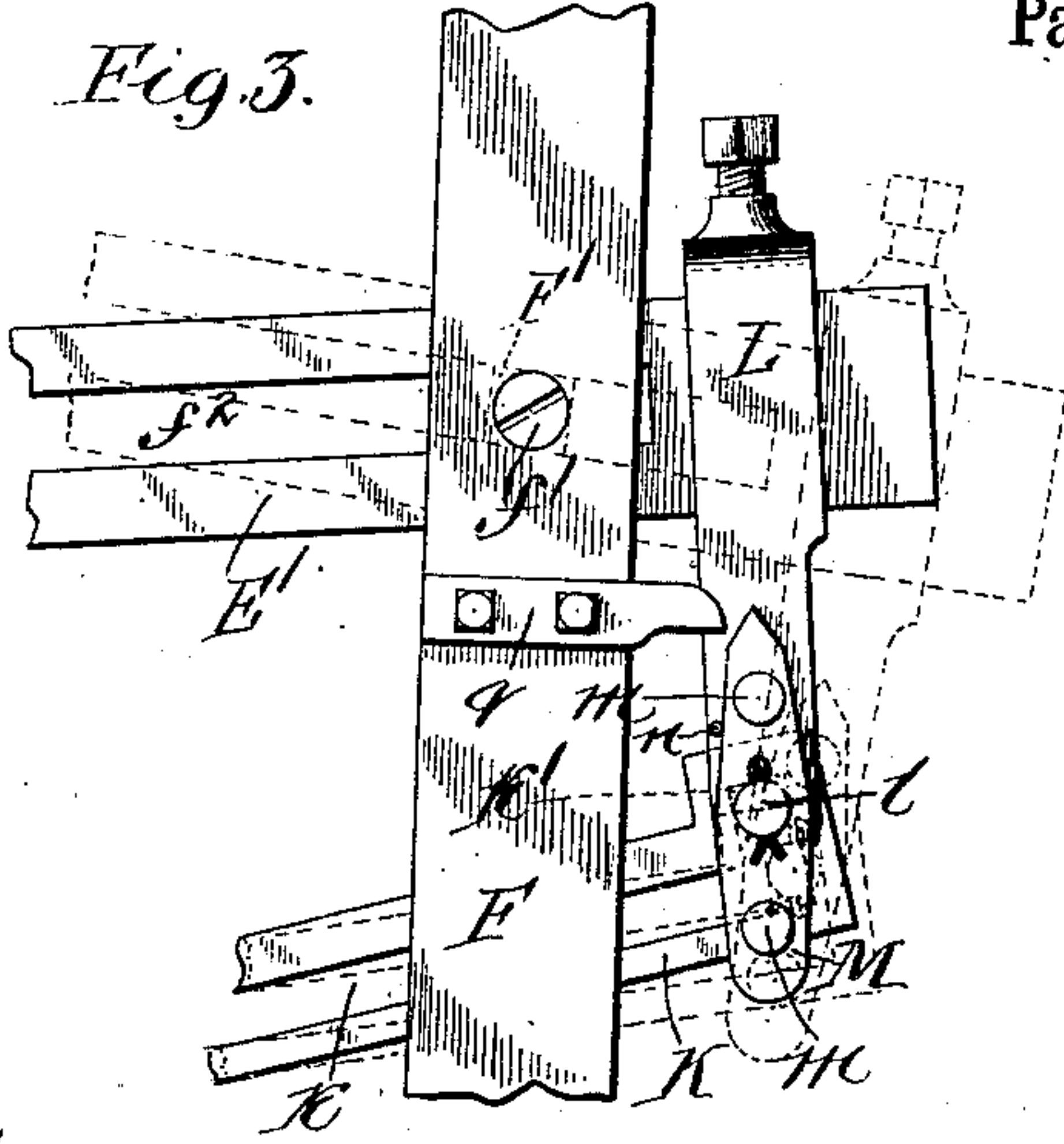


Fig. 4.

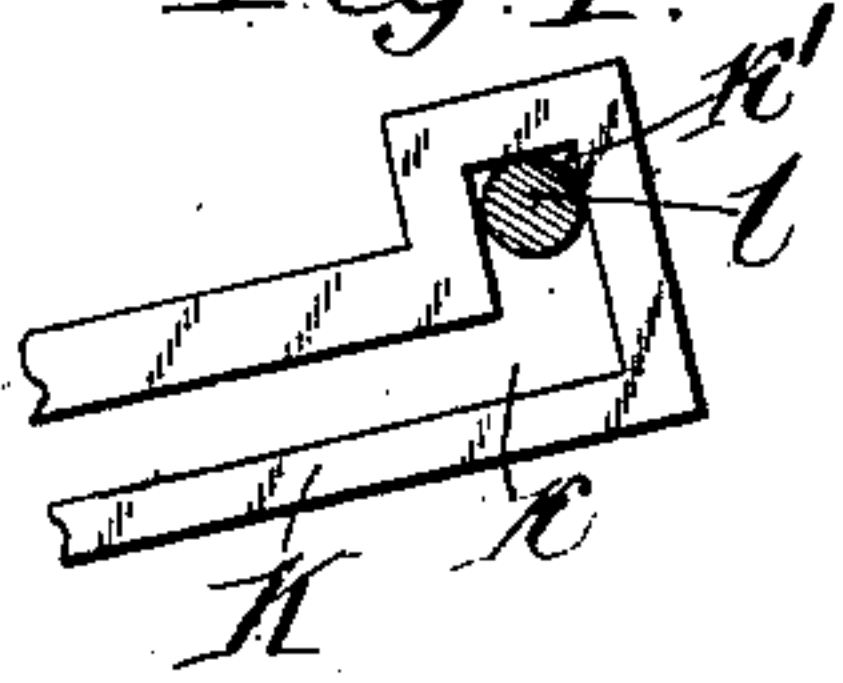


Fig. 5.

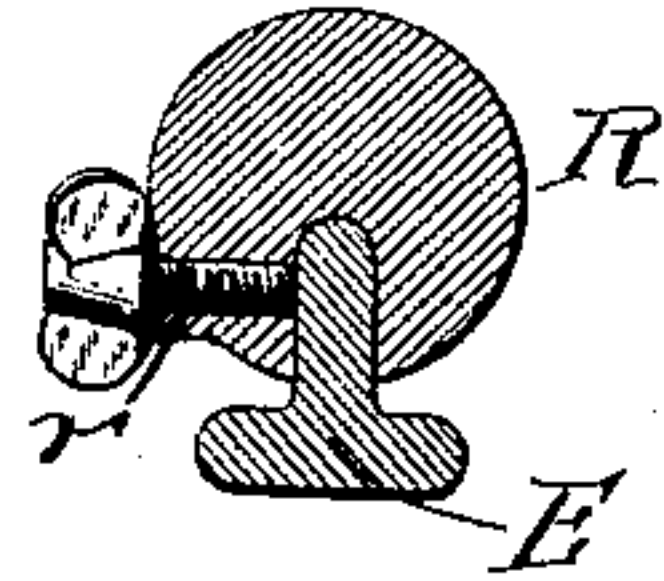


Fig. 6.

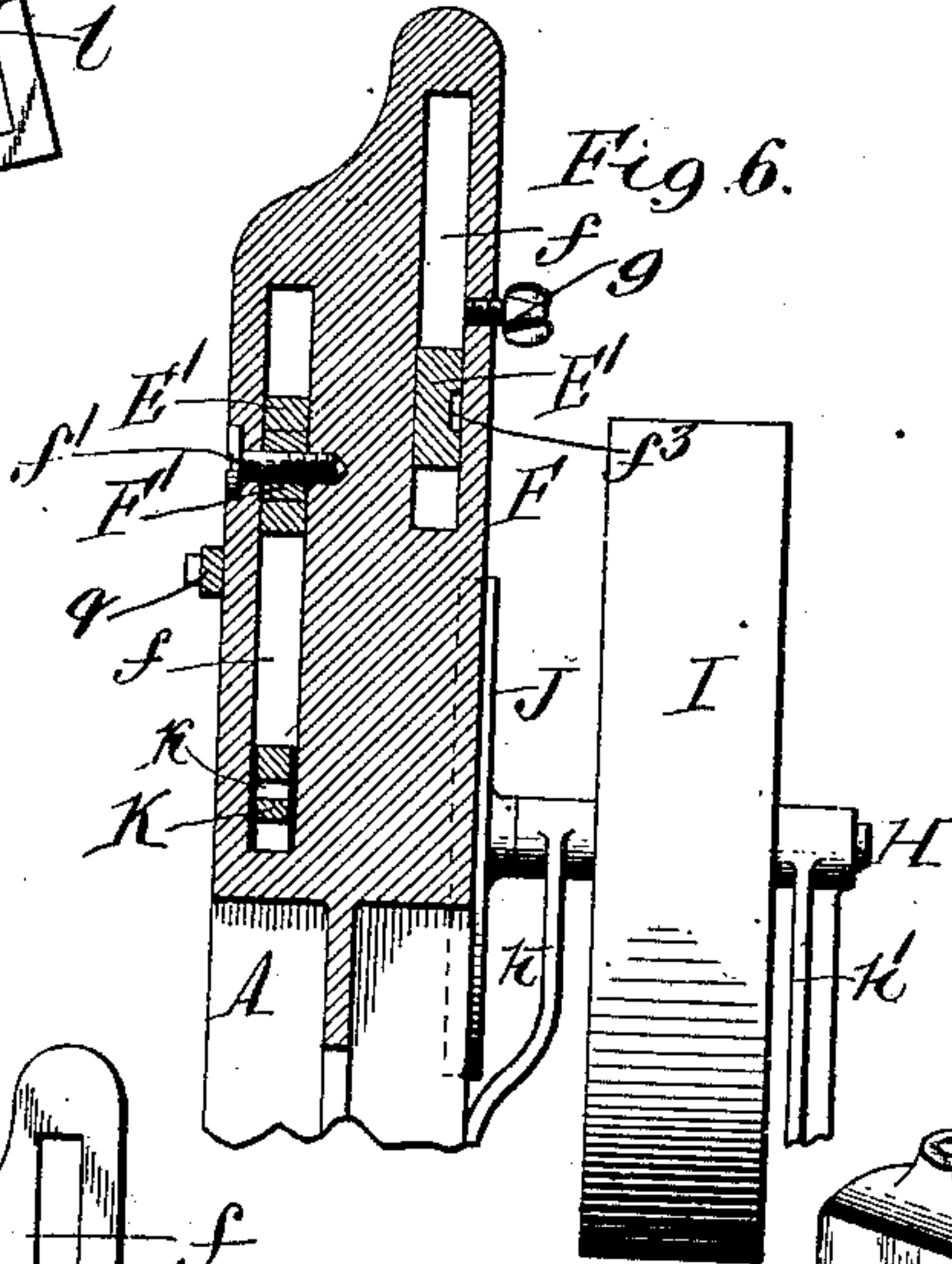


Fig. 7.

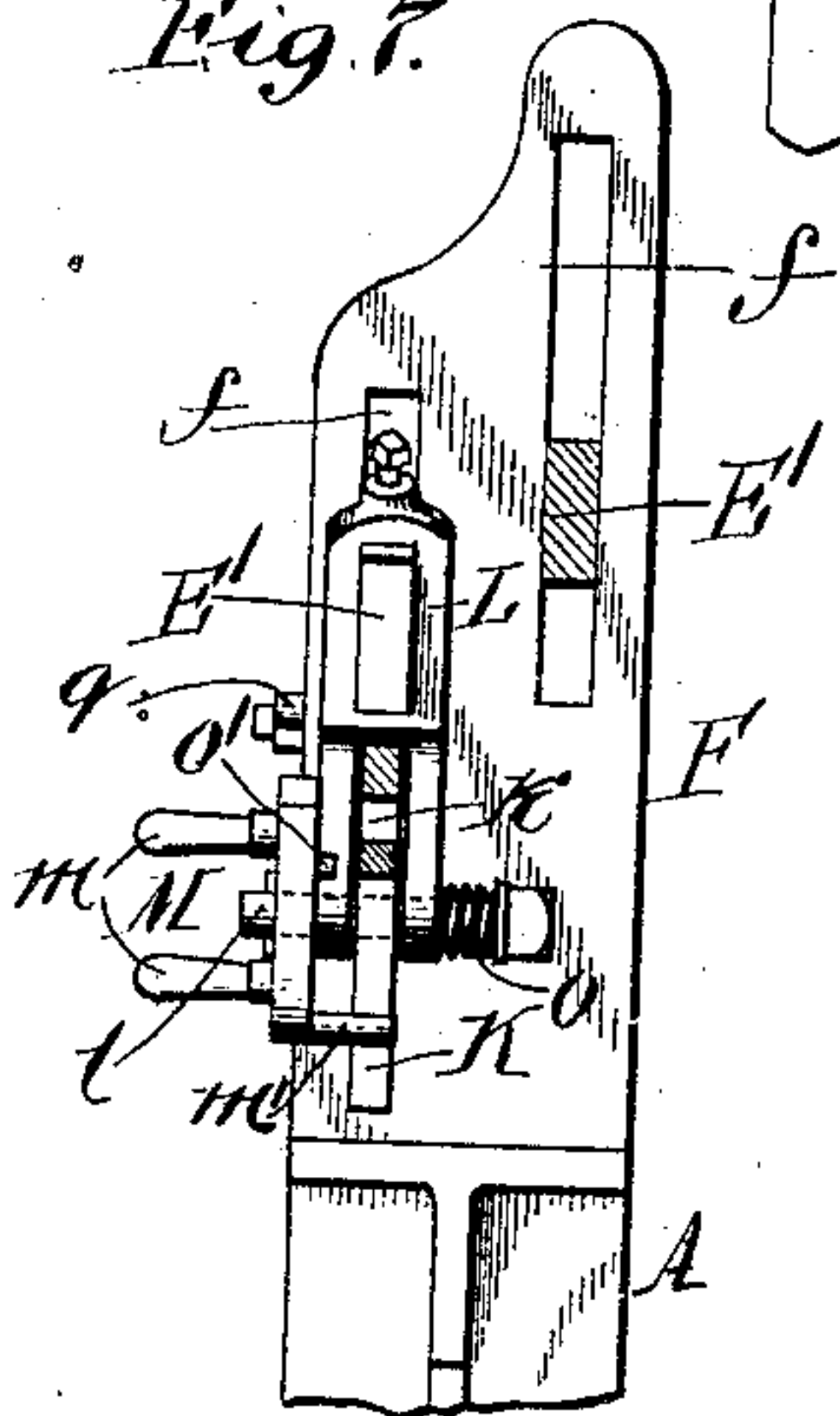


Fig. 9.

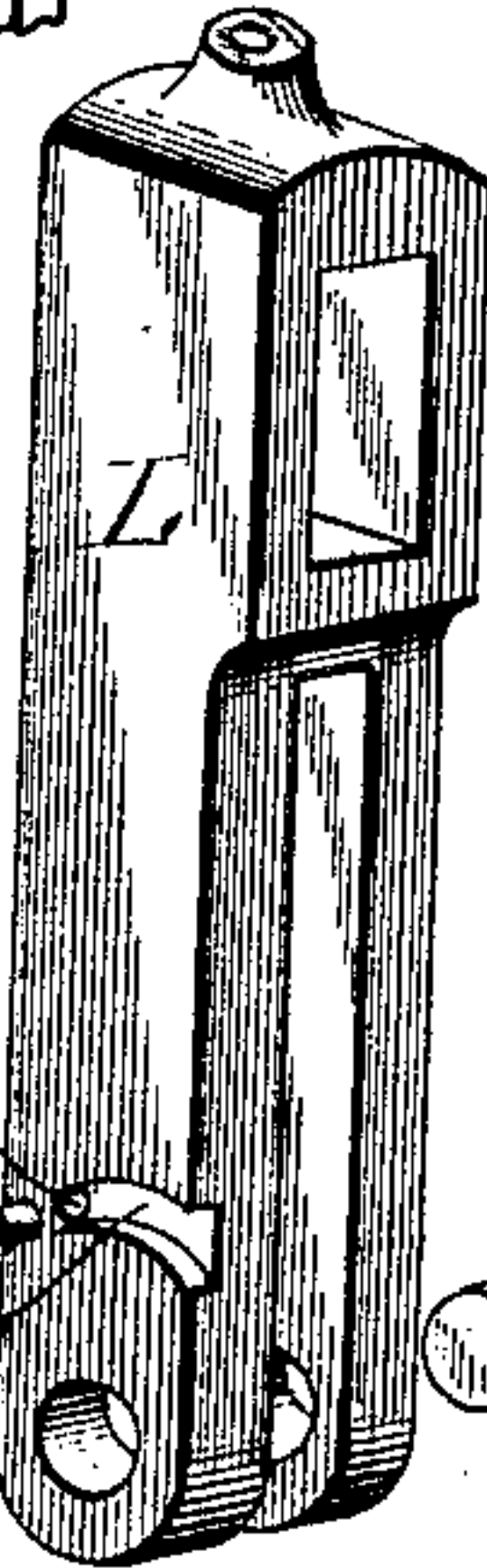


Fig. 8.

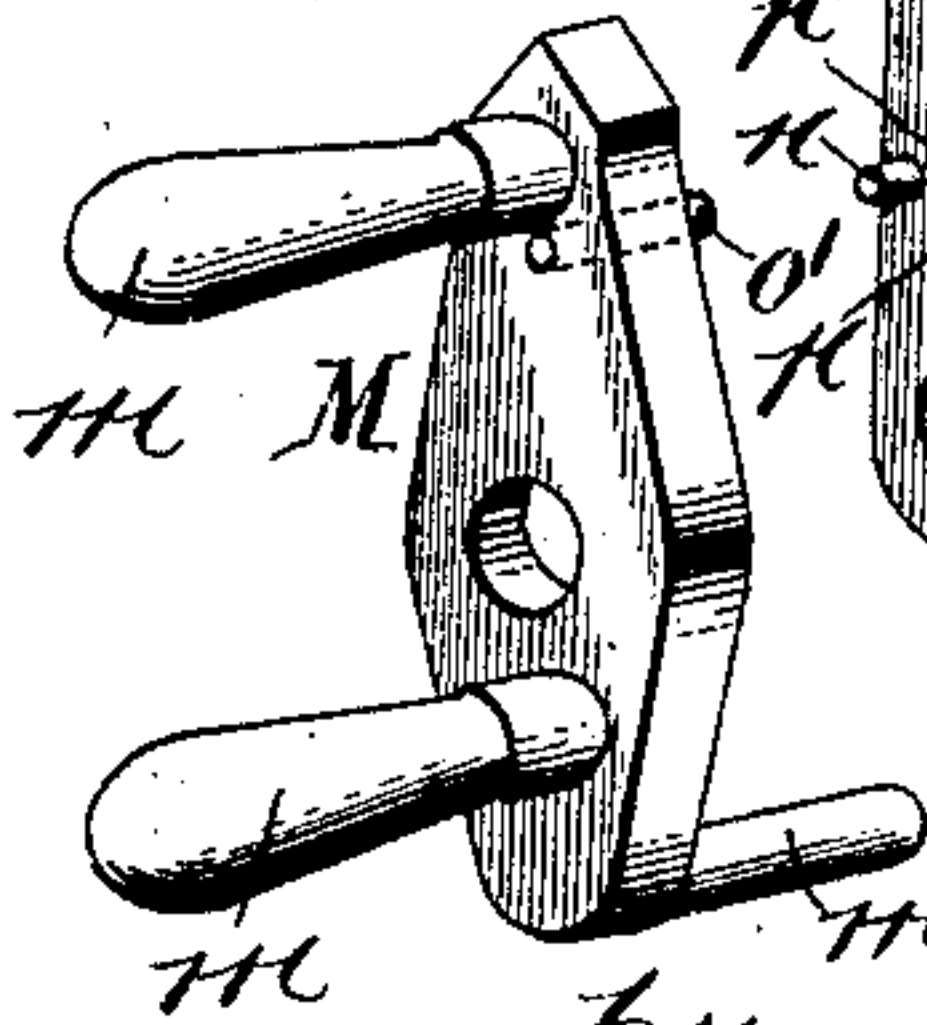
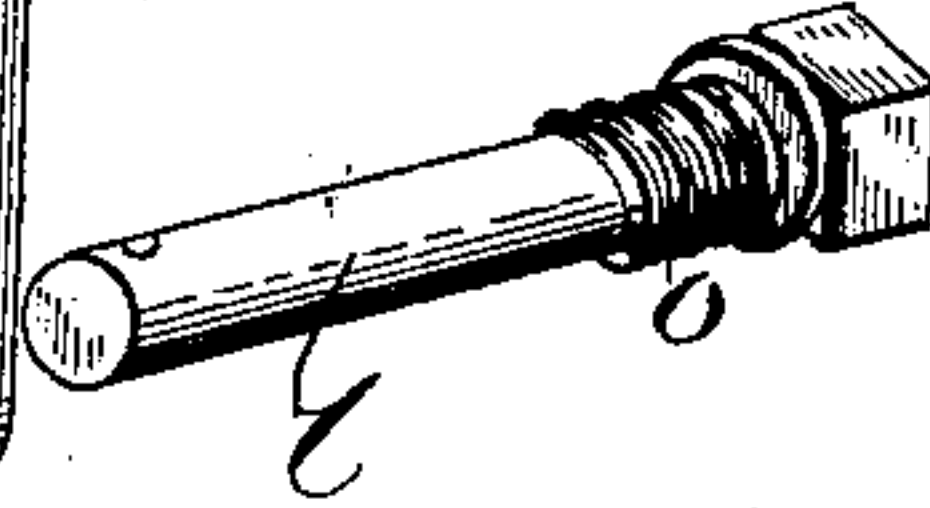


Fig. 10.



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UNITED STATES PATENT OFFICE.

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OF BUFFALO, NEW YORK, A CORPORATION OF NEW YORK.

HACKSAW-MACHINE.

No. 924,767.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed August 16, 1907. Serial No. 388,782.

To all whom it may concern:

Be it known that I, ANTON GRUITSCH, a subject of the King of Servia, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Hacksaw - Machines, of which the following is a specification.

This invention relates more particularly to a hack saw machine having two saws by which stock of different kinds or sizes can be operated upon at the same time, although some of the improvements are equally applicable to machines having a single saw.

The principal object of my invention is the provision of a compact and convenient machine of this character which can be cheaply produced.

A further object is to provide the driving connections of the saws with efficient means which permit one of the saws to be manually thrown out of action while the other continues in operation and which may also be combined with trip devices for automatically throwing one or both saws out of action when the bars or other objects have been severed.

A further object is to so construct the driving mechanism that the saws are subjected to pressure during their effective stroke and relieved from pressure during their return stroke, thus insuring rapid cutting, while at the same time preventing unnecessary wear of the saw blades.

In the accompanying drawings consisting of 2 sheets: Figure 1 is a side elevation of the machine, showing one of the saws in operative position and the other disconnected from the driving mechanism and raised to its inoperative position. Fig. 2 is a top plan view of the machine. Fig. 3 is an enlarged fragmentary side elevation of one of the saw frames and its actuating link and uncoupling lever, showing the position of the parts just as the lever is about to be tripped. Fig. 4 is a fragmentary side elevation of said link, showing the same interlocked with the coupling pin of the saw frame. Fig. 5 is a cross section in line 5—5, Fig. 1. Figs. 6 and 7 are fragmentary transverse sections in lines 6—6 and 7—7, Fig. 1. Fig. 8 is a perspective view of one of the uncoupling levers. Fig. 9 is a similar view of the arm to which

said lever is pivoted. Fig. 10 is a perspective view of the coupling pin.

Similar letters of reference indicate corresponding parts throughout the several views.

A indicates the upright stationary frame of the machine which is comparatively narrow. At opposite ends of the frame are arranged suitable vises or work-holders for the rods, bars or other stock to be sawed. Each of the vises shown in the drawings consists of an overhanging table B carrying an integral jaw *b* at its inner end and a movable jaw *b*¹ guided on the table and having an adjusting screw *b*².

D, D indicate the saws arranged at opposite ends of the machine above the vises and suitably secured in reciprocating yokes or saw-frames E having shanks or extensions E¹ arranged side by side lengthwise of the machine. These shanks pass through vertical slots *f* formed in a pair of standards F rising from the top of the frame A on opposite sides of its center. The shanks are guided on rocking blocks F¹ arranged in longitudinal slots *f*² in the shanks and pivoted on transverse bolts or screws *f*¹ secured in the standards, by which construction the shanks are free to slide lengthwise in the standards and at the same time swing up and down on the bolts *f*¹.

In order to support the saw frames in their elevated, inoperative position, the shank E¹ of each frame is provided in its side in front of its slot *f*² with a recess *f*³ adapted to receive a thumb screw *g* or other suitable retaining device.

H is the driving shaft of the machine arranged transversely at one side of the main frame A, preferably midway between the standards F, as shown in Figs. 1 and 2, the shaft being mounted in brackets *h*, *h*¹ carried by said frame. A driving pulley I is mounted on the outer portion of the shaft, while to its inner end a crank disk J is secured. The saw frames are reciprocated from this disk by connecting rods or links K both pivoted at their inner ends to the wrist pin *j* of the disk. Each of these links is provided with a longitudinal slot *k* which receives a transverse coupling pin *l* carried by the lower end of a depending arm L secured to the rear portion

of the corresponding shank E^1 . The lower end of this arm is forked to receive the link K and the slot of the latter is provided at its rear end on its upper side with a transverse portion or notch k^1 which is adapted to interlock with the coupling pin l , as shown in Figs. 3 and 4. When these parts are thus interlocked, motion is transmitted from the crank disk to the saw frame, reciprocating the latter, while when the rear end of the link K is raised the pin l enters the main or longitudinal portion k of its slot and the link rocks and reciprocates idly upon the pin, allowing the corresponding saw to remain at rest. In its operative position, the link remains in engagement with the pin l of the saw frame by gravity.

M, M indicate releasing or uncoupling devices for lifting the links K to disengage their transverse slot-portions k^1 from the coupling pins l . Each of these devices preferably consists of a lever pivoted between its ends upon the outer end of the adjacent coupling pin l and having handles m for turning it and a pin m^1 projecting inwardly from its lower arm and under the adjacent link K, so that upon rocking the lever to the position shown in connection with the right hand lever in Fig. 1, the link is raised, moving the transverse end portion k^1 of its slot out of engagement with the coupling bolt l and bringing its main longitudinal portion in line with the pin. Upon returning the lever to its upright position, as shown in Fig. 3 and the left hand portion of Fig. 1, the link is released and free to descend, so that when the transverse portion of its slot upon the next forward stroke of the link arrives opposite the coupling pin, the link drops into engagement with said transverse portion, establishing the driving connection between the corresponding saw frame and the crank disk.

The rocking movement of each of the uncoupling levers M is limited in one direction by the lifting pin m^1 and in the opposite direction by a stop pin n projecting from the adjacent arm L. In order to retain said levers in their uncoupling position, a spring o is applied to the pivot pin of each lever between a head or shoulder of the pin and the outer side of the arm L, and the lever is provided above its pivot with a stud or pin o^1 which projects inwardly into a groove p formed in the adjacent side of the arm L. This groove is concentric with the lever pivot and its bottom is inclined lengthwise toward the rear edge of the arm L. In its front end the groove is provided with a recess or depression p^1 with which the stud o^1 interlocks in the uncoupling position of the lever M for reliably holding the latter in this position. As the coupling pin l is free to slide endwise in the arm L to a limited extent, the compressed spring o constantly draws the stud o^1 of the lever M against the bottom of the

groove p . Owing to the rearward slope of the latter the stud under the action of the spring tends to slide toward the rear or deepest portion of the groove as soon as the lever M is turned backward sufficiently to disengage its stud from the locking recess p^1 . The spring and the inclined groove thus assist in swinging the lever from its coupling to its uncoupling position and tend to retain it in the latter position.

It will be understood from the foregoing that the spring o performs the threefold function of holding the lever M in its coupling position, in its uncoupling position and with the cooperation of the inclined groove, moving the lever toward its uncoupling position.

When it is desired to couple the connecting links to the saw frames, it is only necessary to turn the levers M to their upright position, when the notches k^1 of the slotted links will drop into engagement with the coupling pins l , as hereinbefore described.

In order to automatically stop the saws when they have completely severed the pieces of metal clamped in the vises, stationary trip lugs or projections q are mounted on the standards F in the proper position to be encountered by the upper ends of the uncoupling levers M. For this purpose, the lugs are arranged on the outer sides of the standards in line with the levers but slightly above the plane of the upper ends of the levers in the coupling position thereof, as shown in connection with the left hand lever in Fig. 1, so that the levers do not strike the lugs during the normal operation of the saws. By the time, however, that one or the other of the saw frames has descended sufficiently to completely sever the piece of metal, its uncoupling lever M will have been raised into the path of the lug q , as shown in Fig. 3, and upon the next forward stroke of the saw the upper arm of the lever trips over the lug, swinging the lever in the proper direction to disengage the connecting link K from the arm of the saw frame. After completing the sawing operation, the saws may be held in an elevated position by means of the screws g , as hereinbefore described.

It is desirable to exert greater pressure upon some metals than upon others during the sawing operation, and to meet these varying conditions, each saw frame is preferably provided with a removable weight R which, when applied, may be adjusted toward or from the pivot of the saw frame to vary the pressure accordingly. For this purpose, each weight is slotted lengthwise in its bottom to straddle the upper bar of the saw frame and provided with a set screw r or other fastening for holding it in place.

In the operation of the machine, the effective or forward stroke of the saw blades is toward the driving shaft, as indicated by the arrows in Fig. 1. By providing the saw-

frame shanks E^1 in rear of their pivots with the depending arms L and arranging the coupling pins l above the plane of the driving shaft or substantially as shown in the drawings, the crank disk through the medium of the links K tends to swing the rear ends of the shanks upward during the effective stroke of the saws and downward during their return stroke, thus exerting a downward pressure upon the saws when cutting but practically removing the pressure and relieving the saws during their return stroke. The result is that the saws cut more rapidly, while the wear of the same is reduced to a minimum.

I claim as my invention:—

1. In a sawing machine, the combination of a main frame, a saw-frame guided thereon and having a coupling pin, a driving member, and a link detachably connecting the saw frame with said driving member, said link having a longitudinal slot arranged to receive said coupling pin in the inoperative position of the link and said slot having a transverse portion adapted to interlock with said coupling pin, substantially as set forth.

2. In a sawing machine, the combination of a main frame, a saw-frame guided thereon and having a coupling pin, a driving member, a link connecting the saw frame with said driving member and provided with a longitudinal slot having a transverse portion adapted to interlock with said coupling pin, and an uncoupling device for moving said link to bring the main longitudinal portion of its slot in line with said coupling pin, substantially as set forth.

3. In a sawing machine, the combination of a main frame, a saw-frame guided thereon and having a coupling pin, a driving member, a link connecting the saw frame with said driving member and provided with a longitudinal slot having a transverse portion adapted to interlock with said coupling pin, and an uncoupling lever carried by the saw frame and having a projection which engages the link, substantially as set forth.

4. In a sawing machine, the combination of a main frame, a saw-frame guided thereon and having a coupling pin, a driving member, a link connecting the saw frame with said driving member and provided with a longitudinal slot having a transverse portion adapted to interlock with said coupling pin, an uncoupling lever fulcrumed on the coupling pin and engaging said link, and a spring arranged to hold said lever against the member of the saw frame carrying the coupling pin, substantially as set forth.

5. In a sawing machine, the combination of a main frame, a saw-frame guided thereon and having a coupling pin, a driving member, a link connecting the saw frame with said driving member and provided with a longitudinal slot having a transverse portion

adapted to interlock with said coupling pin, the member of the saw frame carrying said pin having an incline, an uncoupling lever for said link mounted on said coupling pin and having a part bearing against said incline, and a spring acting on the coupling pin and tending to draw the lever against said incline, substantially as set forth.

6. In a sawing machine, the combination of a main frame, a saw frame guided thereon and having a transverse coupling pin capable of sliding endwise therein, a driving member, a link connecting the saw frame with said driving member and provided with a longitudinal slot having a transverse portion adapted to receive the coupling pin, the portion of the saw frame carrying said pin being provided in its side with a groove having an inclined bottom, an uncoupling lever for said link mounted on said coupling pin and having a projection which bears against the bottom of said groove, and a spring applied to the coupling pin between a shoulder thereof and the adjacent ungrooved side of the saw-frame member, substantially as set forth.

7. In a sawing machine, the combination of a main frame, a saw frame guided thereon and having a transverse coupling pin capable of sliding endwise therein, a driving member, a link connecting the saw frame with said driving member and provided with a longitudinal slot having a transverse portion adapted to receive the coupling pin, the portion of the saw frame carrying said pin being provided in its side with a groove having an inclined bottom and a locking depression at the shallow end thereof, an uncoupling lever for said link mounted on the coupling pin and having a stud which projects into said groove, and a spring applied to the coupling pin and tending to draw said stud into said groove, substantially as set forth.

8. In a sawing machine, the combination of a main frame, a vertically-swinging saw-frame guided thereon and extending rearwardly beyond its pivot, a driving member, a link detachably connecting the saw frame with the driving member, an uncoupling lever for the link carried by the portion of the saw frame in rear of its pivot, and a trip device arranged on the main frame and co-operating with said lever, substantially as set forth.

9. In a sawing machine, the combination of a main frame, a vertically-swinging saw-frame guided thereon and extending rearwardly beyond its pivot, a coupling pin carried by the rear portion of said frame, a driving member, a link connecting the saw frame with said driving member and provided with a longitudinal slot having a transverse portion adapted to interlock with the coupling pin, an uncoupling lever mounted on the coupling pin and having a projection which

engages said link, and a trip device arranged on the main frame and coöperating with said lever, substantially as set forth.

10. In a sawing machine, the combination
5 of a main frame, a vertically-swinging saw-frame guided thereon and extending rearwardly beyond its pivot, the portion of the saw frame in rear of its pivot having a downwardly extending arm or member, a driving

shaft having a crank member, and a link 10 connecting the crank-member with said arm, substantially as set forth.

Witness my hand this 13th day of August, 1907.

ANTON GRUITSCH.

Witnesses:

C. F. GEYER,
E. M. GRAHAM.