

No. 677,784.

F. T. LEILICH.

Patented July 2, 1901.

STOP MECHANISM FOR SEWING OR OTHER MACHINES.

(Application filed Sept. 24, 1900.)

(No Model.)

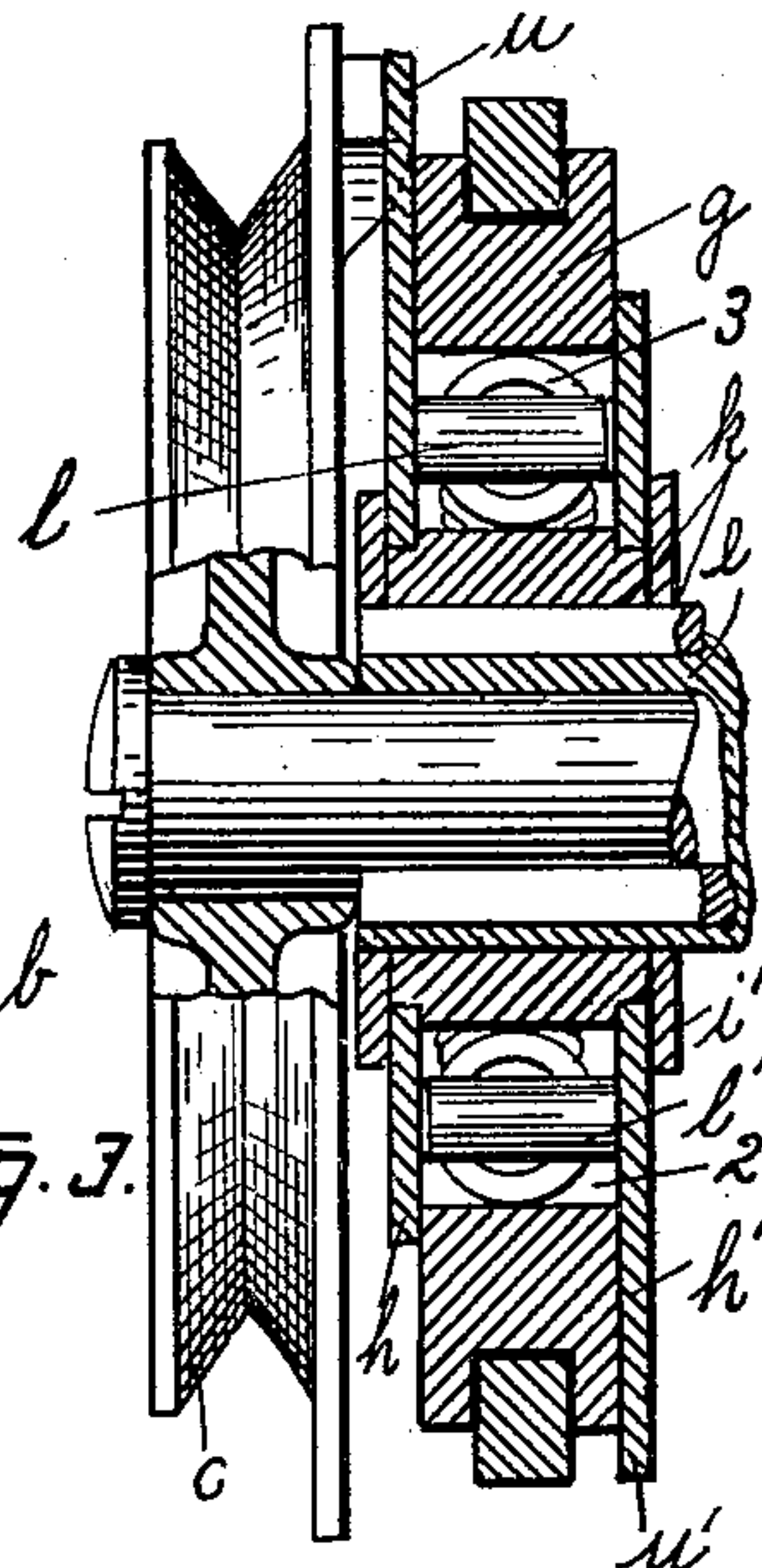
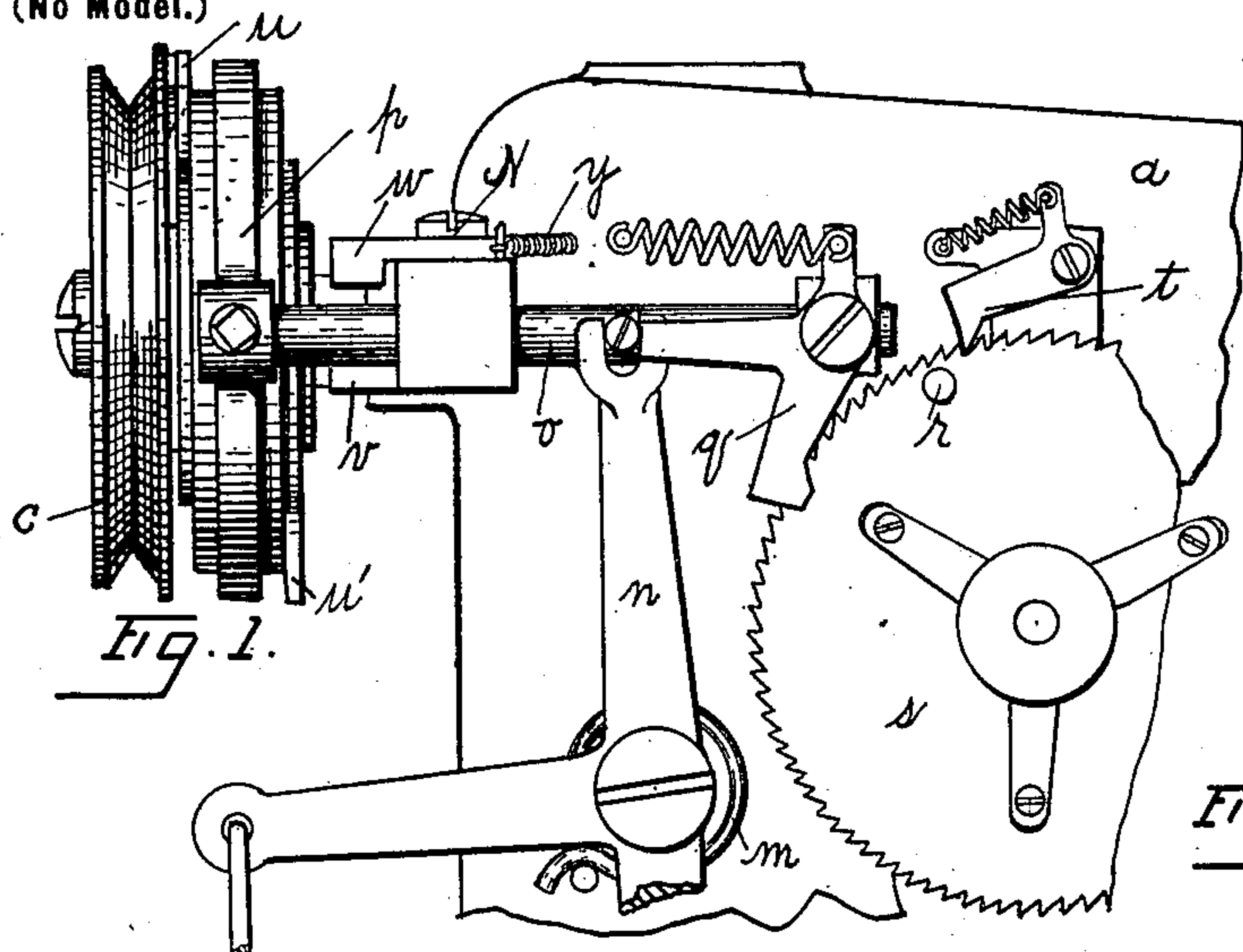


Fig. 5.

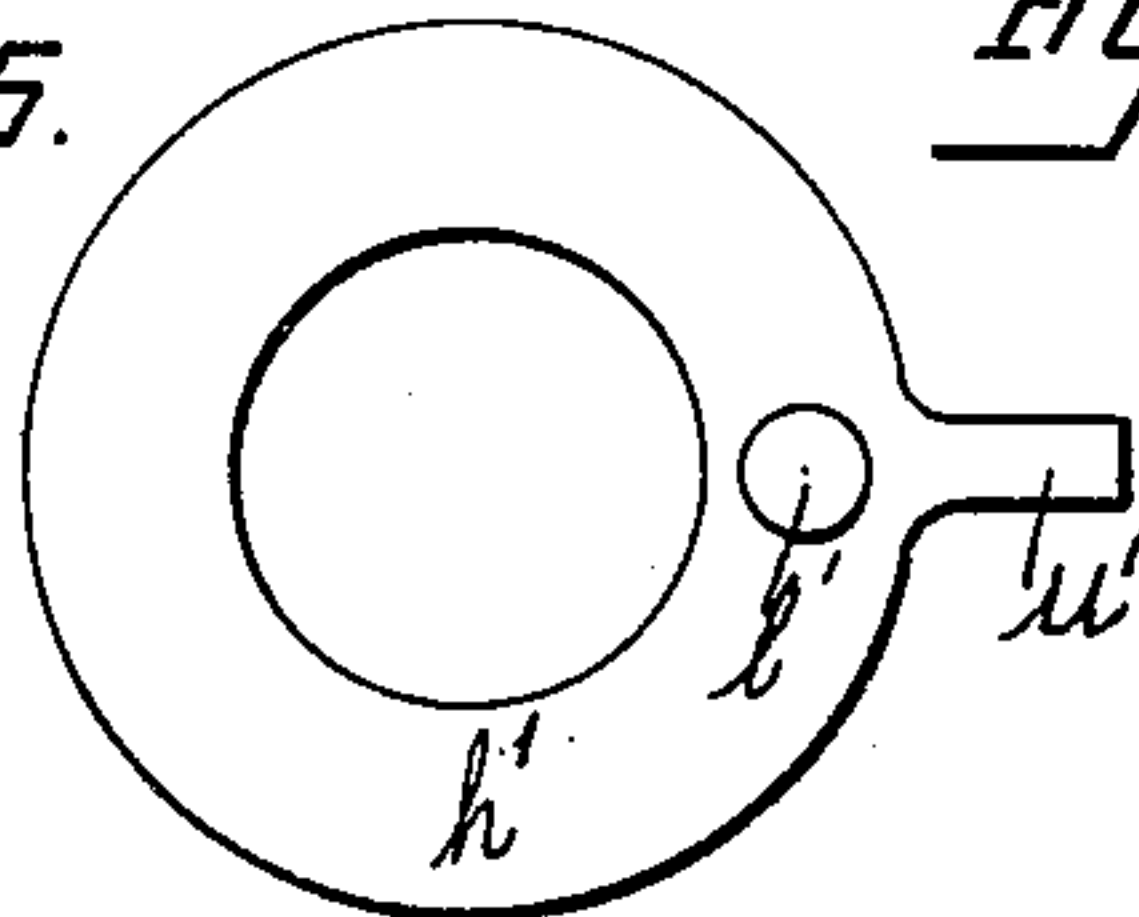


Fig. 6.

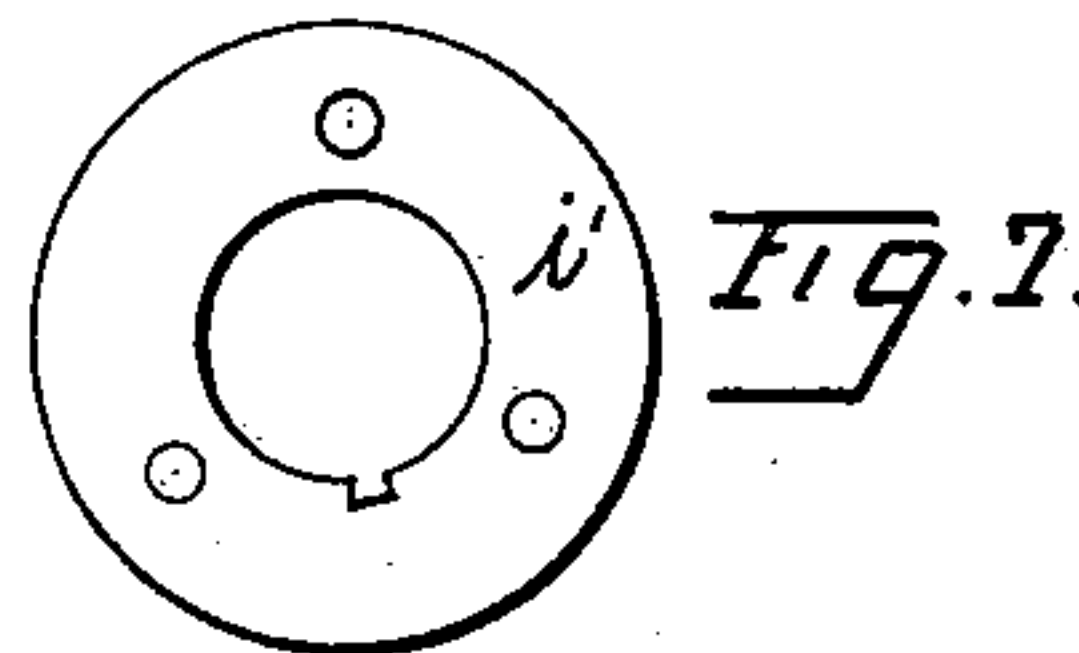
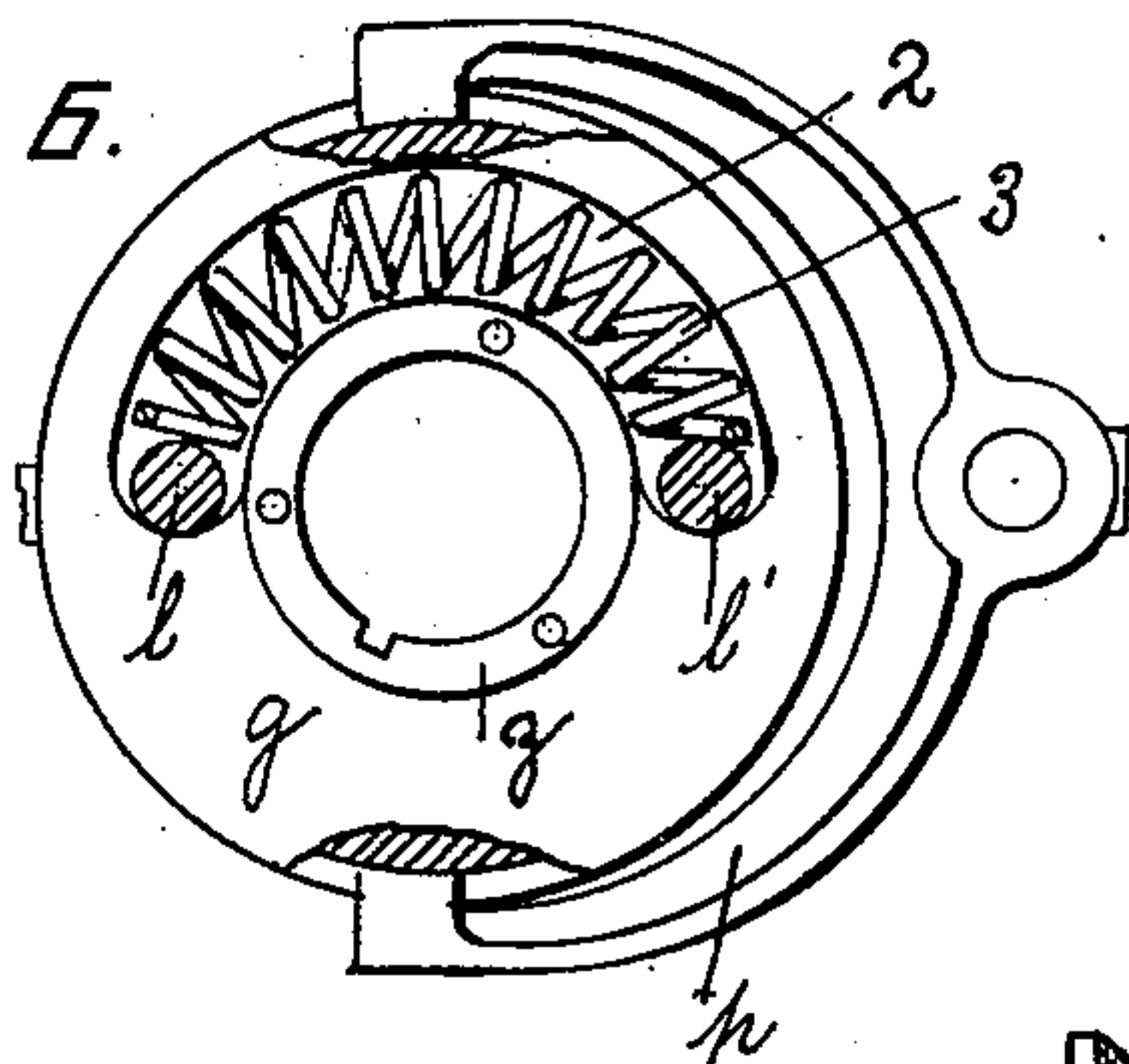
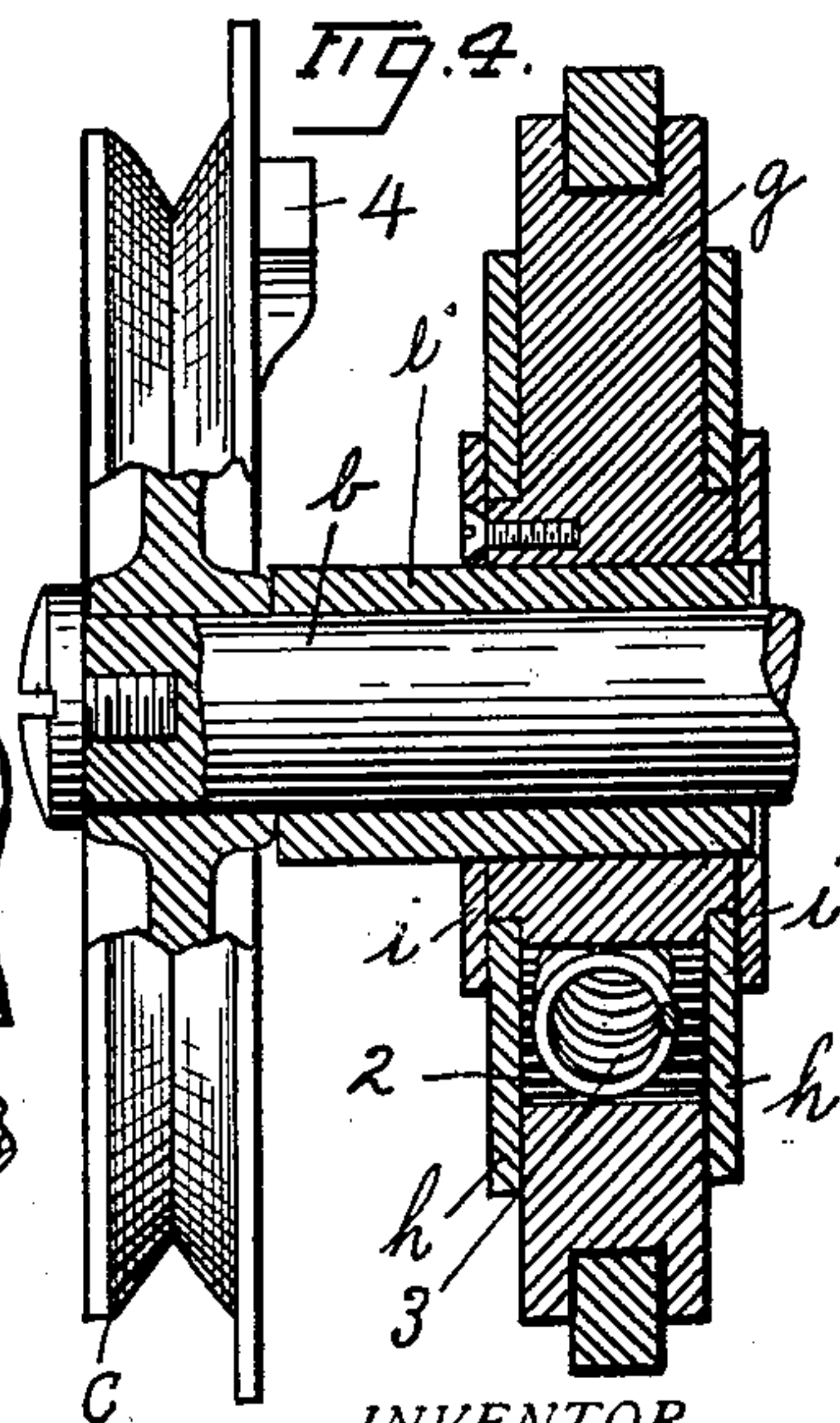
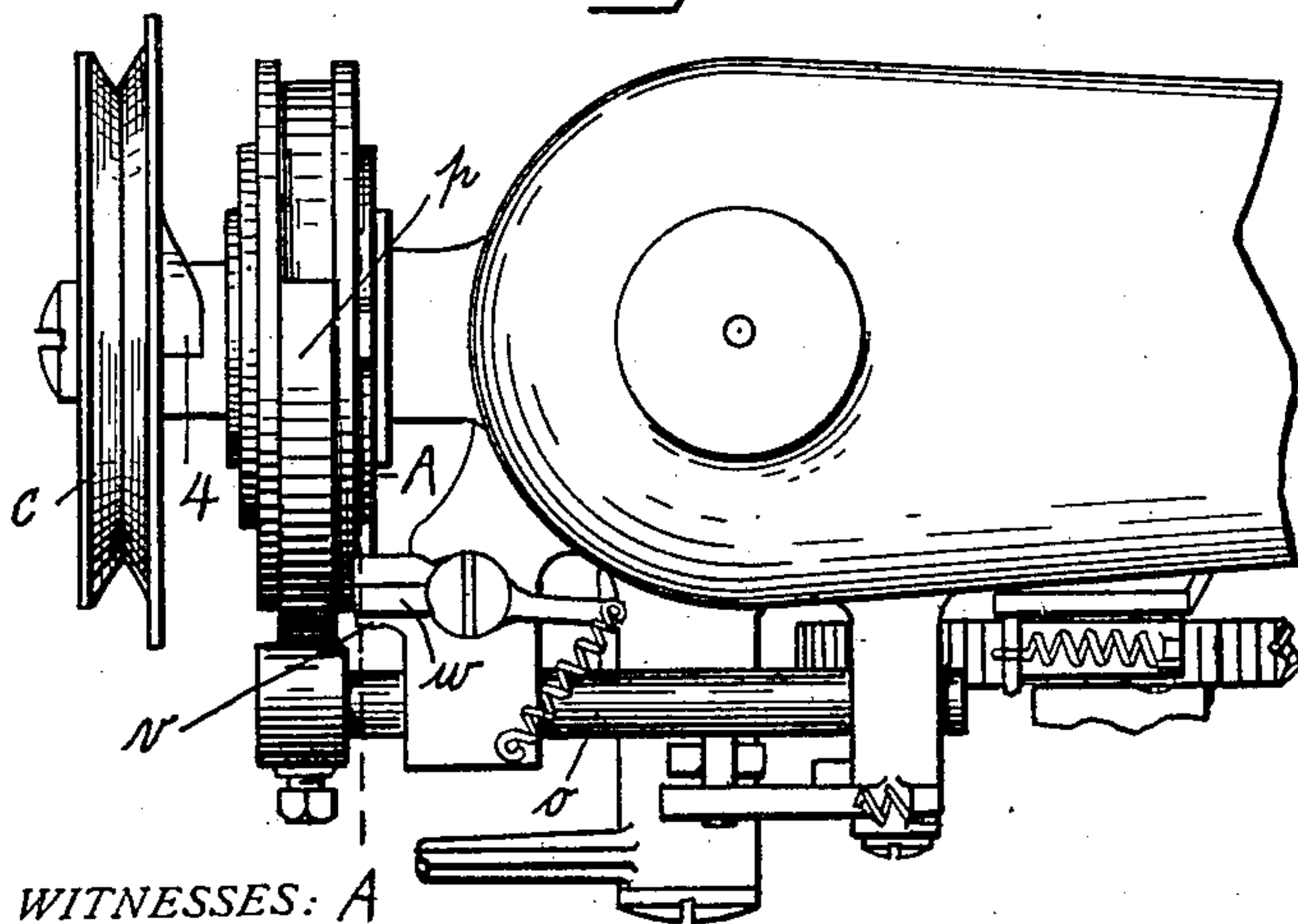


Fig. 2.

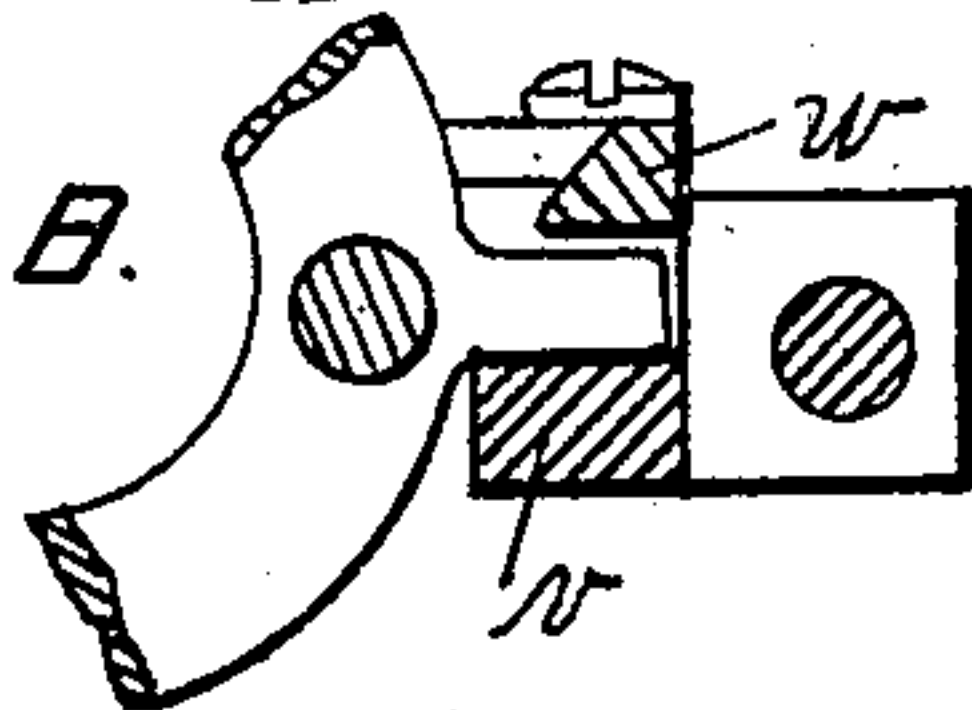


WITNESSES: A

W. N. Daniels

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Fig. B.



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STOP MECHANISM FOR SEWING OR OTHER MACHINES.

SPECIFICATION forming part of Letters Patent No. 677,784, dated July 2, 1901.

Application filed September 24, 1900. Serial No. 30,999. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS T. LEILICH, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Stop Mechanism for Sewing or other Machines, of which the following is a specification.

In various classes of rapid-running machines, such as special classes of sewing-machines, it is desirable when stopping the machine to automatically stop the parts in a certain predetermined position. For instance, it is desirable that a sewing-machine should be stopped when the needle is out of the work, and in certain classes of sewing-machines, as those for sewing on buttons, the stoppage must take place when the machine has made a predetermined and definite number of stitches. Since these machines run at a high speed, the momentum of the moving parts is considerable, and the difficulty in arresting said parts at an exact predetermined point without danger or breakage of some of the parts is proportionately great.

The object of my invention is to provide simple means for accomplishing this result; and my invention resides in the novel construction, combination, and arrangement of parts for the above ends hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a rear elevation of a portion of a sewing-machine equipped with my improved stop mechanism, the parts being shown in the position they occupy when the machine is in operation. Fig. 2 is a plan view of the same, the parts being shown in the position they occupy when the machine is at rest. Fig. 3 is an enlarged vertical section of the stop mechanism, the parts being in the same position as in Fig. 1. Fig. 4 is a similar view, the parts being in the same position as in Fig. 2. Fig. 5 is a side view of one of the impact-rings removed. Fig. 6 is a side view of the body of the clutch, the impact-ring on that side being removed. Fig. 7 is a side view of one of the washers which retain the impact-rings on their outer side, and Fig. 8 is a broken vertical section on the line A A of Fig. 2.

Referring to the drawings, *a* represents the

frame of a sewing-machine, and *b* the main driving-shaft therefor. Upon the end of said shaft is carried a loose pulley *c*. The loose pulley *c* is driven from any suitable source of power and rotates constantly upon the main shaft. Said pulley *c* communicates motion to the shaft *a* through the medium of a clutch, which comprises a main body *g*, two impact-rings *h h'*, and two retaining-washers *i i'*. The clutch-body *g* is splined upon the sleeve *e*, as shown at *k*. Thus the clutch imparts rotation to the main shaft, while freely slidable thereon. As one of many ways in which the clutch may be shifted I have herein shown it moved longitudinally upon the shaft by means of a spring *m*, acting on a lever *n*, which shifts a guide-rod *o*, attached to the clutch-yoke *p*, embracing the clutch. The guide-rod *o* is free to move and the spring *m* is able to act when the lever *q* is raised by a stud *r* on a wheel *s*, rotated by the pawl *t*. When the clutch is so instantaneously shifted away from the loose pulley, a projection *u'* on the inner impact-ring *h'* of the clutch is brought into the same vertical plane with a fixed stop *v* on the frame, arresting the rotation of the projection *u'*, and to prevent recoil of the ring there is provided a catch *w*, pivoted at *n* and retracted by a spring *y*, so that as soon as projection *u'* has passed said catch the catch flies back over said projection and prevents backward movement thereon. The catch *w* has also the function of partially absorbing the momentum of the ring before it is finally arrested by the stop *v*.

The momentum of the clutch-body and of the main shaft and other parts rotated therewith is considerable, and an instantaneous stoppage of these parts is liable to result in breakage of some of the moving parts or of the fixed stop, which arrests the movement. I avoid this by providing the clutch with an impact-ring retained against the side of the clutch-body by means of the washer *i'* and rocking upon the collar *z*, formed on the clutch-body. Said ring *h'* has secured thereto a stud *l'*, which extends laterally from said ring and enters a semicircular slot 2, formed in the clutch of the body. In said slot 2 a coiled spring 3 is retained in position by the ring *h'* on one side and a similar ring *h* on the

opposite side. The stud l' is interposed between the forward end of the spring 3 and the forward end of the slot 2, and a similar stud l , secured to the ring h , is interposed between the rear end of the slot 2. This being the construction, the only part which is arrested instantaneously is the ring h' , and this ring being comparatively light its momentum is small. The momentum of the other moving parts is taken up by the compression of the spring 3, and when this spring has been compressed and has expanded again under its resilient force the parts of the machine will when at rest assume the exact position desired, since any tendency to rebound is prevented by the action of the catch-lever w , the parts then assuming the position shown in Figs. 2 and 8. A similar provision is necessary in starting the machine. The loose pulley d constantly revolves at a high speed, and to impart this high speed to the main shaft b in a very short time without danger of breakage the impact-ring h is provided, having a projection u , which when the clutch-body is shifted toward the loose pulley by the lever n is engaged by a lug 4 on said pulley and is instantaneously set in rotation thereby, the inertia of the clutch-body and of the main shaft being overcome more gradually through the medium of the spring 3.

While I have herein shown the stop mechanism as applied to a sewing-machine, it is to be understood that I do not limit my invention to this application thereof, and the same may be applied to any rotary movement in which a quick stoppage is desired at an exact predetermined position of the parts.

I claim—

1. In a stop mechanism, the combination of a shaft, a pulley rotating coaxially with said shaft, means for imparting rotation to the pulley independently of the shaft, a stop, and a clutch-body rotating with the shaft and longitudinally shiftable thereon to be engaged by the pulley when moved in one direction and to engage the stop when moved in the other direction, and resilient means for imparting motion from the pulley to the clutch-body and absorbing the motion of the clutch-body when arrested by the stop, substantially as described.

2. In a stop mechanism, the combination

of a shaft, a loose pulley rotating thereon, a stop, and a clutch longitudinally shiftable on the shaft but rotating therewith, said clutch comprising a clutch-body, a device revoluble with the clutch-body, but having an independent rotary movement relative thereto and arranged to engage the loose pulley when shifted in one direction, a device revoluble with the clutch-body, but having an independent rotary movement relative thereto and arranged to engage the stop when moved in the opposite direction, and resilient means interposed between said devices and the clutch-body for breaking the force of the impact, substantially as described.

3. In a stop mechanism, the combination of a shaft, a loose pulley rotating thereon, a stop, and a clutch, longitudinally shiftable on the shaft to be engaged by the pulley when moved in one direction and to engage the stop when moved in the opposite direction, and comprising a clutch-body rotating with the shaft and two impact-rings resiliently connected with the clutch-body, one to resiliently communicate the rotation of the pulley, and the other to break the force of the impact upon the stop, substantially as described.

4. In a stop mechanism, the combination of a shaft, a loose pulley rotating thereon, a stop, and a clutch longitudinally shiftable on the shaft to be engaged by the pulley when moved in one direction and to engage the stop when moved in the opposite direction, and comprising a clutch-body rotating with the shaft and having a semicircular slot, two impact-rings, one arranged to be engaged by the pulley, and the other to engage the stop, when the clutch is correspondingly shifted, said rings having studs in the respective ends of the slot, and a coiled spring in said slot between said studs, substantially as described.

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

FRANCIS T. LEILICH.

Witnesses:

M. R. DANIELS,
Z. A. DANIELS.