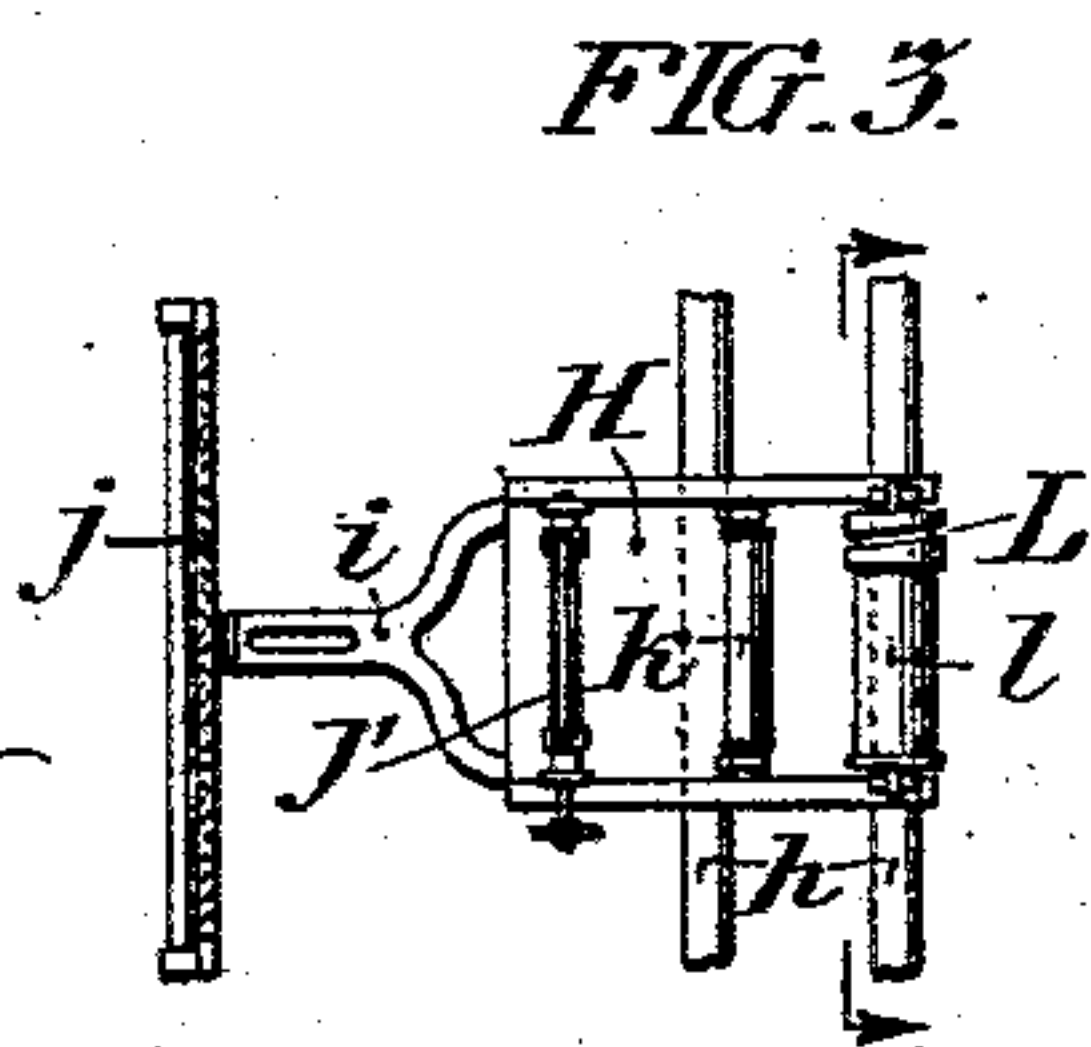
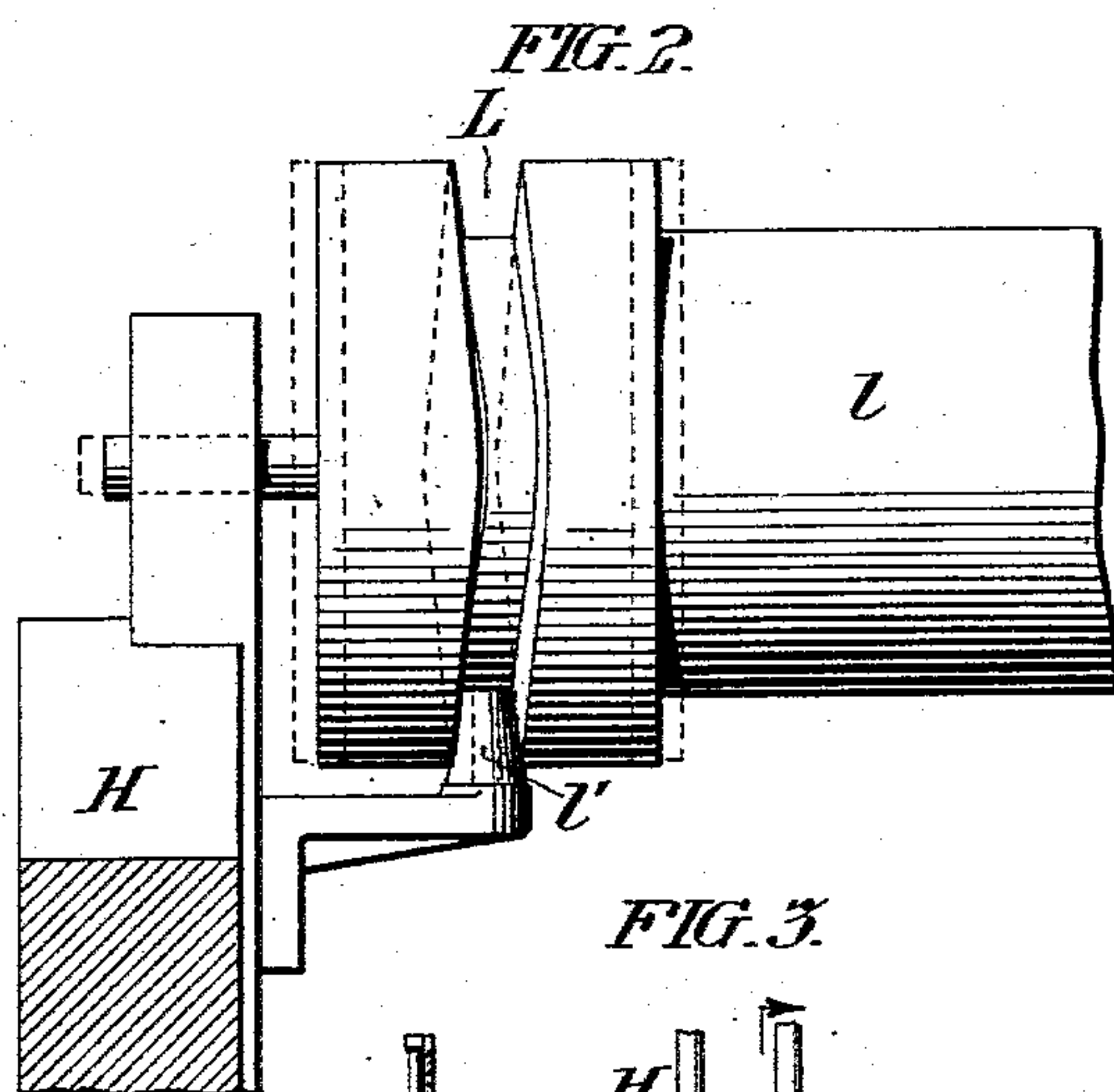
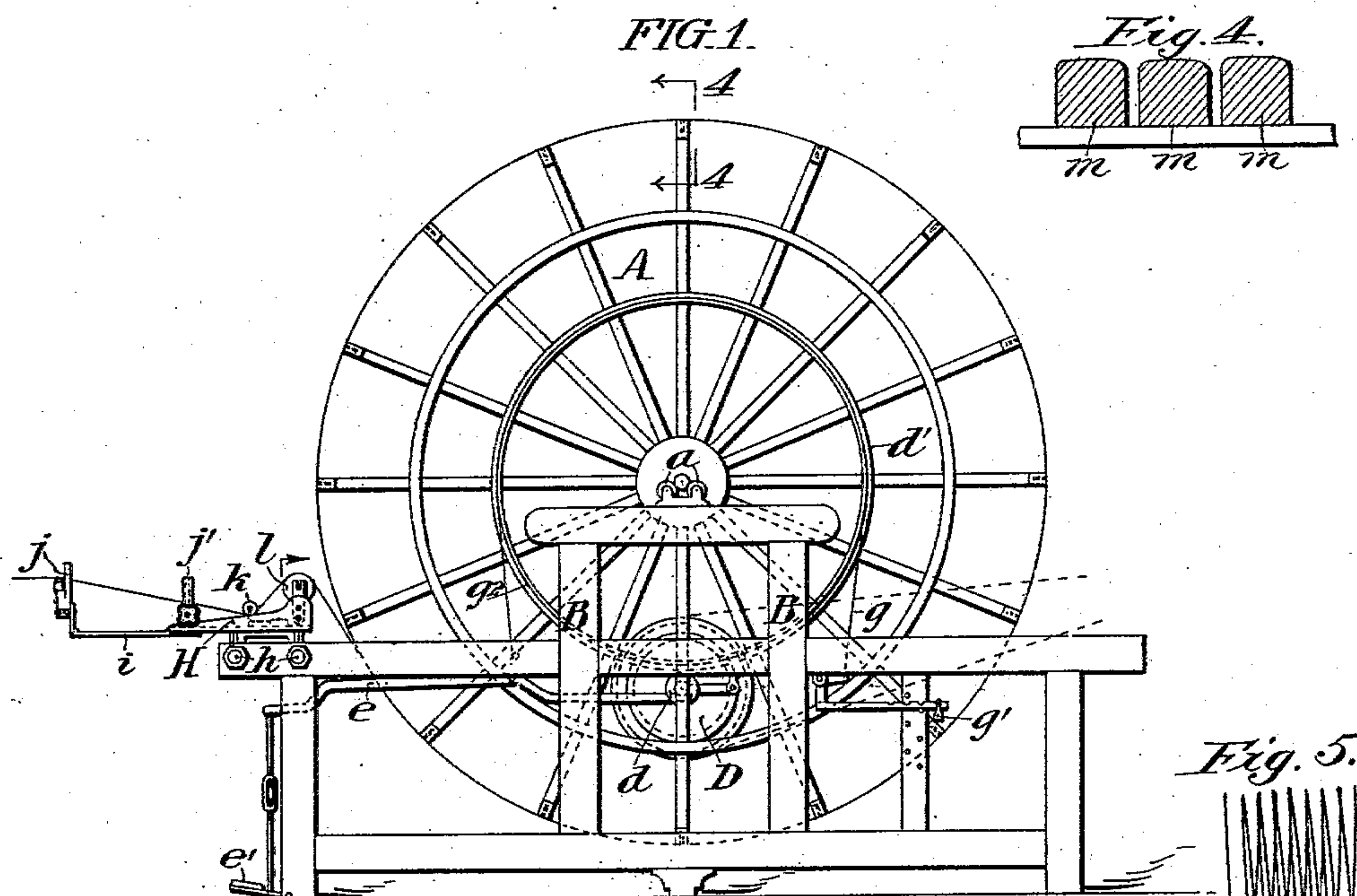


No. 757,491.

PATENTED APR. 19, 1904.

F. OTT.
 WARPING MACHINE.
 APPLICATION FILED MAR. 29, 1902.

NO MODEL.



WITNESSES:

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FREDERICK OTT, OF WOONSOCKET, RHODE ISLAND.

WARPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 757,491, dated April 19, 1904.

Application filed March 29, 1902. Serial No. 100,502. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK OTT, a citizen of the United States, residing at No. 17 Maple street, Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Warping-Machines, whereof the following is a specification, reference being had to the accompanying drawings.

My mechanism relates to devices used for feeding warps from the spools and winding them in sections upon a large reel, from which they are to be subsequently run off upon a beam after all the sections of the reel have been filled with the warps from the spools. In apparatus of this sort it is necessary to keep each section of warps upon the reel separate from the other sections in order that the beaming process may take place with regularity and without breakage of thread. It is desirable that the reel be caused to carry as great a length of warp as possible, as there is economy of time and machinery in so doing. Many devices have been made to increase the capacity of the reel, including the well-known Swiss attachment, by which the sets of warps are caused to overlap after the manner of shingles. I have discovered that by giving to each section of warps as it is wound a slight vibratory motion it is possible to cause the space upon the reel assigned to each section to carry twice as much thread as when the section is wound without vibration.

I have illustrated in the accompanying drawings a simple method of embodying my invention, in which—

Figure 1 represents a side elevation of a warping-machine. Fig. 2 is an enlarged view of the vibrating guide-roller. Fig. 3 is a plan view of the reed-frame. Fig. 4 is a partial cross-section of one of the reel-slats, taken along the line 4 4, Fig. 1, and showing three sections of warps in position upon the reel. Fig. 5 is a diagrammatic view illustrating the zigzag position of the warps of one of the sections.

A is the reel, which may be of the ordinary and well-known construction. It may be of sufficient width to carry several thousand separate warp-threads. This reel is mounted on

roller-bearings *a*, journaled in the standards B. The reel is driven by means of a belt-pulley D, upon the shaft of which is a friction-disk *d*, which is in engagement with a ring or flange *d'*, which is secured to one side of the reel. As usual in these warping attachments, the driving-shaft is mounted upon a lever *e*, which can be moved by a treadle *e'*, so as to allow the operator to quickly control the motion of the reel. A brake-cord *g*, one end of which is fast while the other is under tension from the weight *g'*, surrounds the grooved flange *g''*, secured to one side of the reel. Thus far the construction is the usual one. The reel may further be provided with timing devices and other usual attachments. It is of course fitted with means for unwinding the warps onto a beam, which, however, being no part of my invention I have not shown.

Immediately in front of the reel two transverse rods *h h* are mounted between the side standards running across the full width of the machine. Upon these rods rests the reed-frame H with capacity of ready lateral adjustment. The reed-frame has a projecting bar *i*, which carries the large reed *j*. In front of this, with suitable means for adjustment, is the small reed *j'*. In front of this is a fixed guide-roller *k* and in front of this the vibrating guide-roller *l*. This latter roller has formed upon one end a cam-groove L. To one of the sides of the reed-frame is attached a fixed conical pin *l'*, projecting into the path of the cam-groove. The roller *l* has free lateral play in its bearings and as it revolves is thus caused to vibrate by the pin traversing the cam-groove.

Each set or section *m* is led from the spools through the large reed and small reed under the guide-roller *k*, over the vibrating roller *l*, and thence down onto the reel. Let it be supposed that it is desired to wind a section of, say, three hundred ends. The reed-frame is first adjusted in front of that part of the reel which it is intended the section shall occupy. The section is led from the spools through the reeds and under and over the guide-rollers to the reel. The reel is then set in motion and the warping proceeds, each revolution caus-

ing the warp-threads to pile up on top of themselves. Where, as was heretofore the case, the winding is effected without the lateral vibration of the guide-roller, the section of warps as soon as it reaches any considerable height begins to lose its shape by reason of the slipping of the top threads over the bottom ones, causing the entire section to make a curved pile somewhat expanded at the bottom. This causes the section to take up more than its appropriate space of the reel unless the warping stops before the pile assumes any great height. It also causes confusion and tangling of the threads of one section with those of the adjacent sections, resulting in breaking of the thread. If, however, by the use of my device the guide-roller is caused to vibrate as the feeding proceeds, the slight zigzag feeding of the threads onto the reel thereby occasioned, as illustrated in Fig. 5, gives to the section as it is wound sufficient consistency to allow double the quantity of warp to be reeled on that is possible if the ordinary methods of winding are used. The roller *l* being of small diameter in comparison with the reel *A* and vibrating one or more times for each rotation, the warp-threads are caused to zigzag many times for each rotation of the reel. When one section has been completed, the reed-frame is adjusted laterally, and the winding of another section proceeds. After the desired width of the reel has thus been filled by successive sections the whole body of warp is run off onto the warp-beam.

Having thus described my invention, I claim—

1. In a warping-machine, the combination of the reel; a guide-roller from which the warp-threads are fed to the reel in sections; and means for causing the guide-roller to vibrate laterally several times during each rotation which the reel makes, substantially as described.

2. In a warping-machine, the combination of a wide reel capable of holding a plurality of warp-sections; a reed-frame with reed and

guide-roller capable of feeding a single section of warps to the reel; means for laterally adjusting the reed-frame for feeding successive sections to the reel; and means for imparting a lateral vibration to the guide-roller from which the warps are fed to the reel, substantially as described.

3. In a warping-machine, the combination of the reel; a reed; an undershot roller, *k*, and an overshot roller, *l*, from which the warps pass down to the reel; and means for imparting lateral vibration to the overshot roller, substantially as described.

4. In a warping-machine the combination of a large reel; a small guide-roller from which the warp-threads are fed to the reel; and means whereby the guide-roller is caused to vibrate laterally a number of times during each complete rotation of the reel, substantially as described.

5. In a warping-machine the combination of a large reel; a small guide-roller from which the warps are fed in sections to the reel, and which slides laterally in its bearings; a disk with a cam-groove fixed upon the same shaft as the roller; and a pin projecting into the cam-groove; whereby the warps are caused to lie in a zigzag position upon the reel, substantially as described.

6. In a warping-machine, the combination with the reel; of means for causing the warps as they are fed in sections to the reel to vibrate laterally a number of times for each rotation of the reel, whereby the warp-threads of each section are caused to be built up separately upon the reel by reason of the zigzag position in which they are fed, substantially as described.

In witness whereof I, FREDERICK OTT, have hereunto signed my name, with two subscribing witnesses, this 25th day of March, A. D. 1902.

FREDERICK OTT.

Witnesses:

FRANK A. JILLSON,
SAML. P. COOK.