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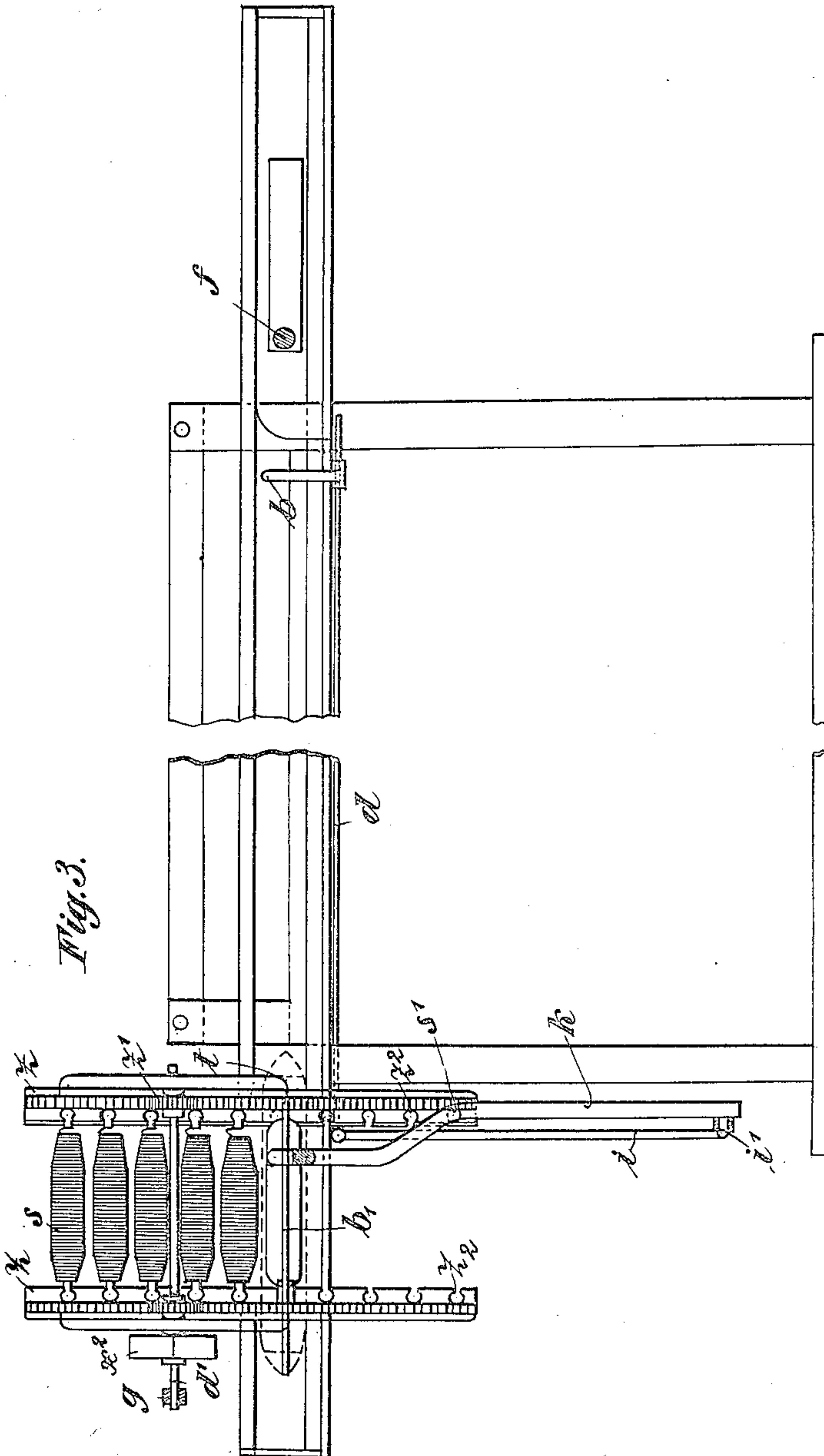
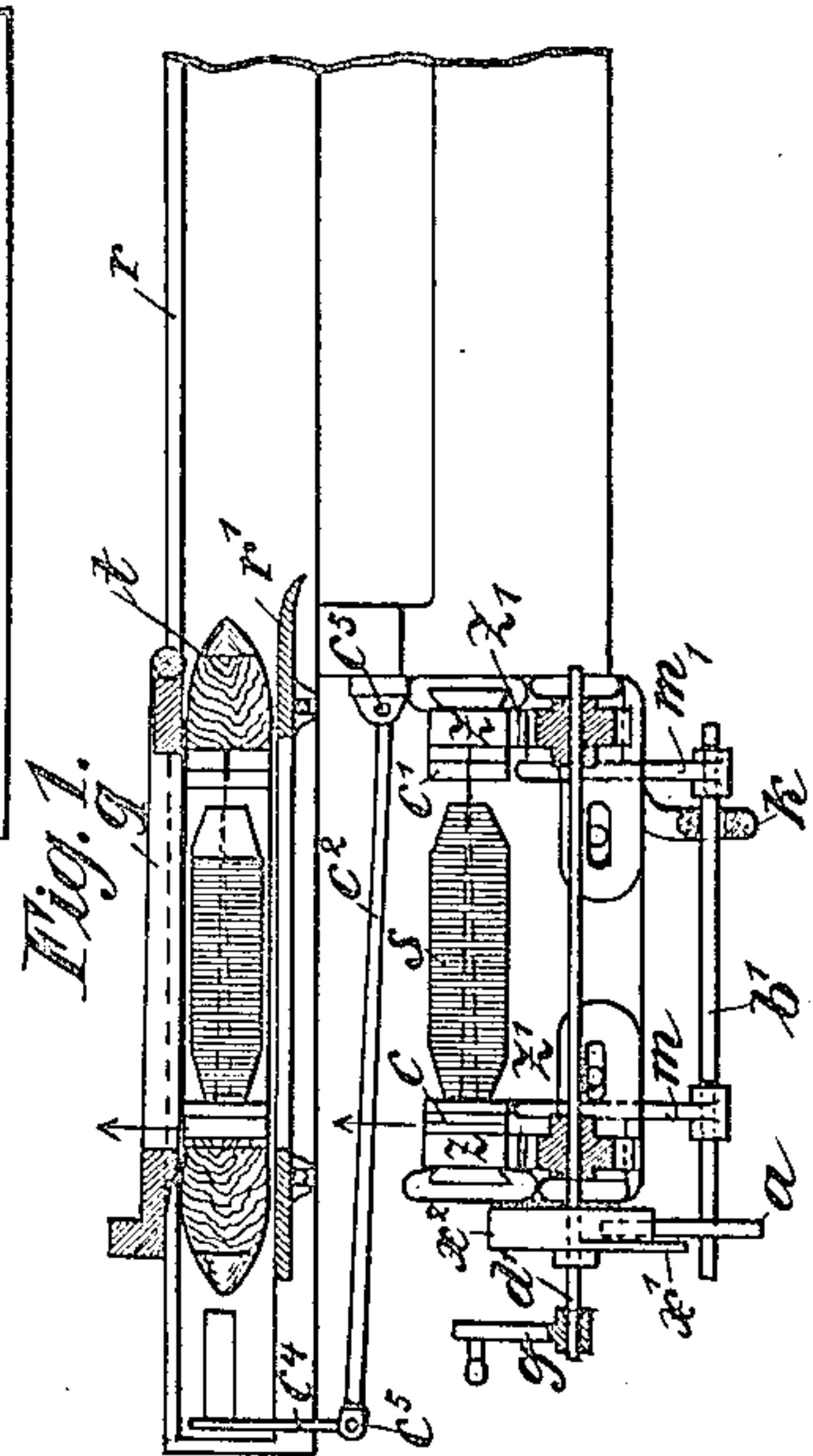
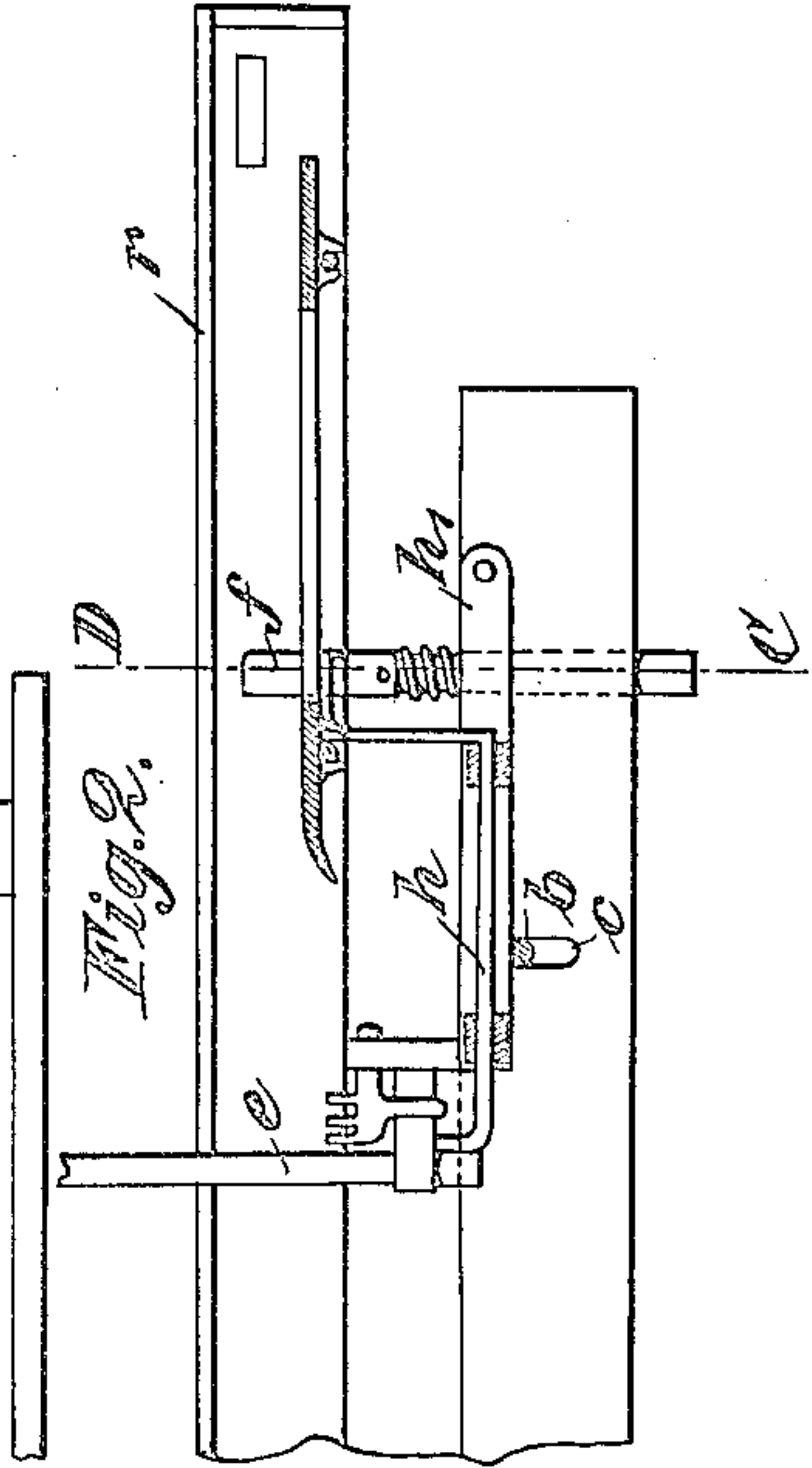
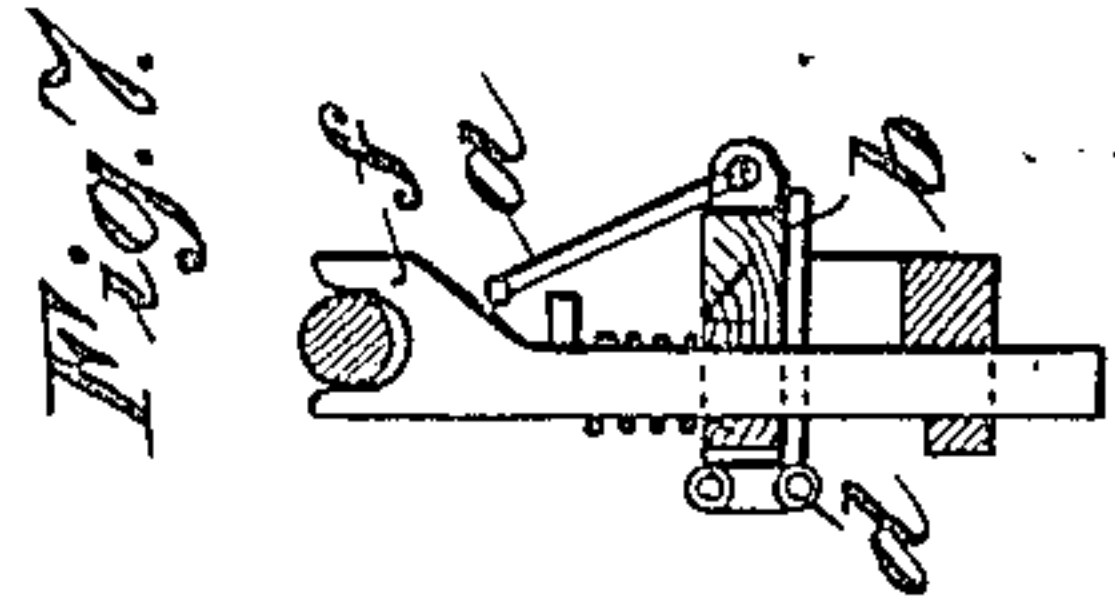
J. GABLER.

PATENTED MAR. 17, 1908.

WEFT REPLENISHING MECHANISM FOR LOOMS.

APPLICATION FILED MAR. 11, 1903.

3 SHEETS—SHEET 1.



Witnesses:
 Carl Lindenmann
 Friedrich Höfel

Inventor:
Johannes Goller

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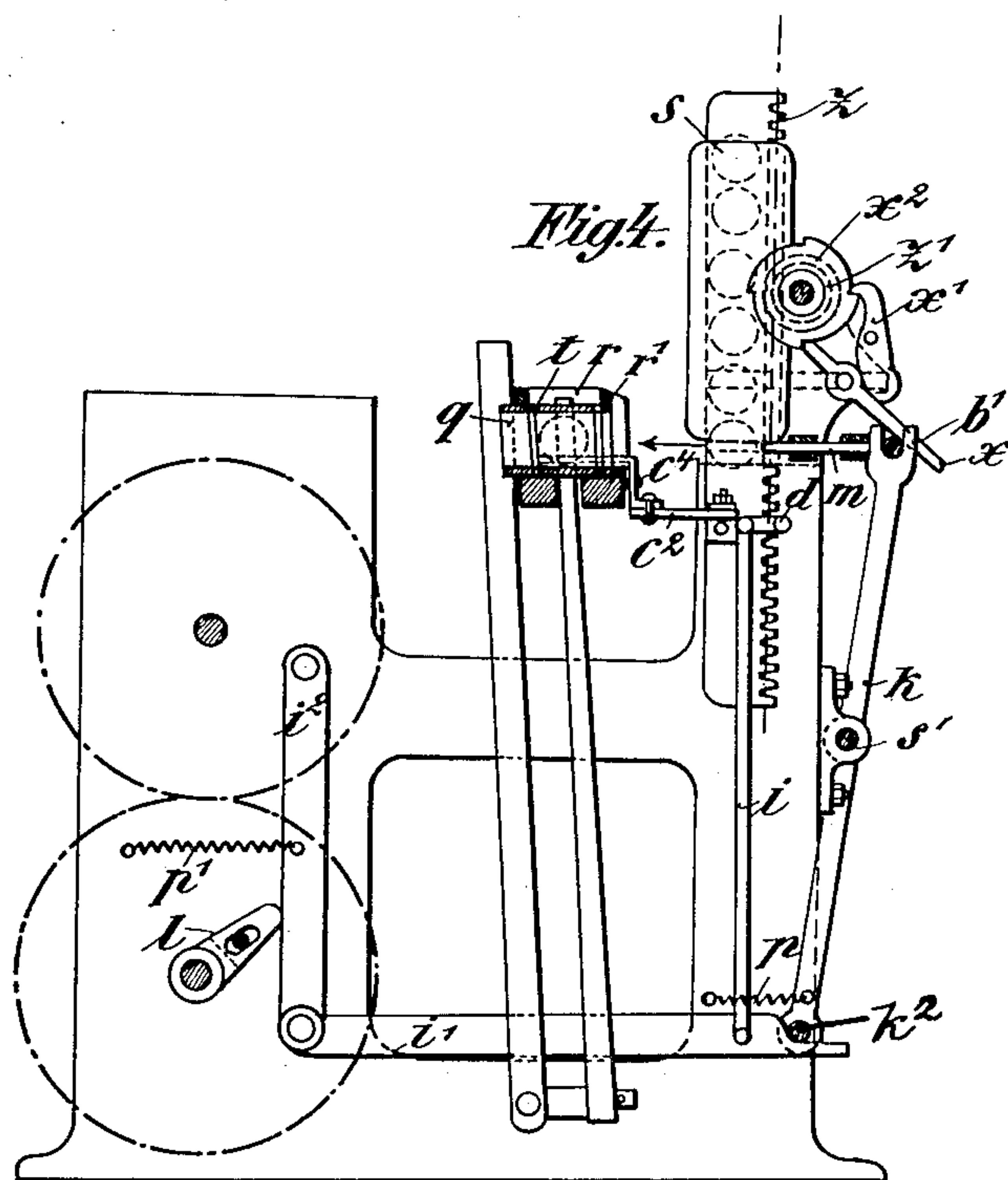
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3 SHEETS—SHEET 2.



Witnesses:
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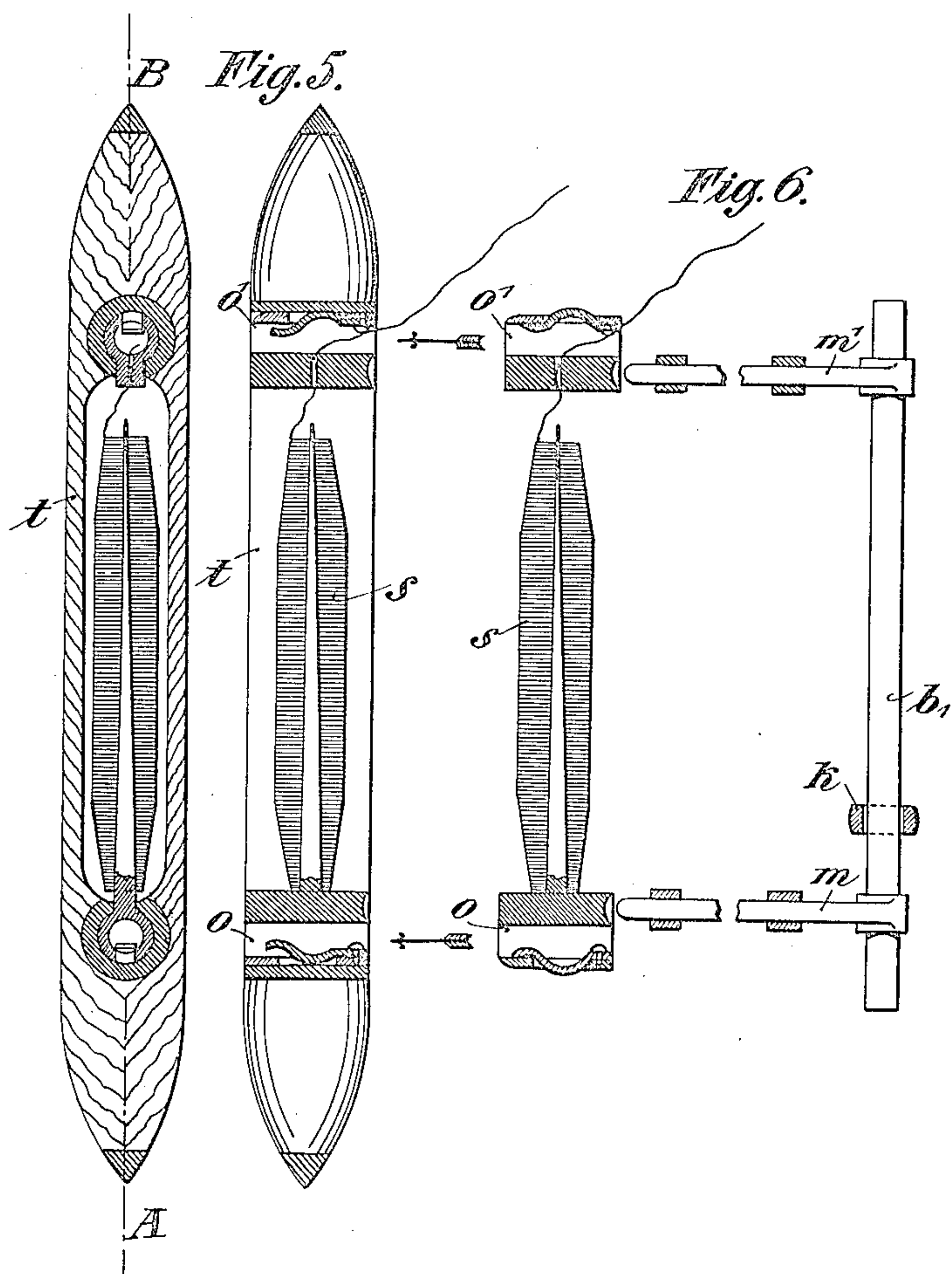
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3 SHEETS—SHEET 3.



Witnesses:
Karl Lindemann
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UNITED STATES PATENT OFFICE.

JOHANNES GABLER, OF HORNBERG, GERMANY, ASSIGNOR TO SOCIETE ANONYM DES
METIERS GABLER, OF BASEL, SWITZERLAND.

WEFT-REPLENISHING MECHANISM FOR LOOMS.

No. 882,106.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed March 11, 1903. Serial No. 147,292.

To all whom it may concern:

Be it known that I, JOHANNES GABLER, weaving foreman, a subject of the German Emperor, residing at Hornberg, Gutachstrasse, in the Grand Duchy of Baden, Germany, have invented a new and useful Weft-Replenishing Mechanism for Looms, of which the following is a specification.

In the looms heretofore employed, the slots or openings of the shuttles are placed vertically with relation to the bottom of the lay or batten. In my invention the shuttle is turned on one side in the batten so as to have the slot opening for bobbins which are to be inserted lengthwise, horizontal to the bottom rail of the batten. Furthermore, in the devices heretofore employed for the automatic insertion and exchange of shuttles and bobbins, respectively, only a limited small number of the same could be stored up in the magazine for the weaving operation, and in most cases these constructions necessitated special construction of looms.

My invention is distinguished by the possibility in only shuttle looms of mounting any suitable number of bobbins upon extension rails provided with a scale and with open guide openings for the said bobbins for the automatic insertion of the bobbins and for the removal of the same from the shuttle upon the beating up of the loom, which may be provided either with foot or top actuated picker staves.

The new apparatus is adaptable to any kind of looms now in use without the necessity of changing the construction thereof. It comprises a yieldingly arranged feeler or weft detector which is lowered upon the empty bobbin only containing but a few courses of yarn, this operating the apparatus by means of series of levers and by an adjustable cam.

Figure 1 of the accompanying drawings shows a plan view, the bobbin ready for insertion in front of the binder r' , and also the full bobbin in place in the shuttle t . There may be any suitable number of such bobbins which are mounted in slots z^2 of the graduated bars or rails. The lowest bobbin is in position to be pushed into the shuttle. As soon as a full bobbin has been inserted in the shuttle the racks z , together with the full bobbins mounted in the slots z^2 can descend by one bobbin thickness; Fig. 2 shows the weft detector or feeler f in plan view, which

like a finger key, is extended toward the lay and rests upon the bobbin, the longitudinal section being shown in the Fig. 7 on the line C—D; Fig. 3 shows in front view the bobbins ready for insertion and mounted upon the sectional or graduated bars z , in combination with levers and connection with the feeler; Fig. 4 shows the frame of the loom provided with the bobbin exchange mechanism; Fig. 5 shows a plan and sectional view after line A—B in Fig. 5 of the shuttle t with the weft bobbin s in position; and Fig. 6 represents the weft bobbin ready for insertion. Fig. 7 is a detail sectional view taken on line C—D of Fig. 2.

According to Figs. 5 and 6 the bobbin frame o and the thread guide o' consists of two separate parts, and consequently they are not connected with each other. For each of the bobbin frames o there is a complementary thread guide o' through which the thread from the bobbin is led and, the two parts are then inserted in the slots of the bars or rails z to be pushed simultaneously into the shuttle at the time replenishment is desired. The thread guide o' is of cylindrical form and of such dimensions as to accurately fit into an aperture formed in the shuttle, into which it is pushed when the arm m moves forward. A spring bears against the end walls of the slot and thereby holds the thread guide o' in position. The bobbin frame o is similarly formed, a spring thereon acting in a similar manner to that just described, the two springs retaining the holder in position until it is displaced by the insertion of a new bobbin.

The action of the apparatus is as follows: The feeler f mounted to slide on the loom frame is urged forward, a spiral spring pushing the said feeler. On the movement of the shuttle to the right, and at the beat of the lay, the feeler will enter into the aperture in the shuttle and bear against the bobbin contained therein. If there is still sufficient yarn upon the bobbin, the feeler will be pressed back, the lever a resting in an elevated position upon the incline f' of fork f . If the bobbin has become nearly exhausted leaving only a few turns of yarn thereon, the feeler will straddle the weft bobbin, and the lever a will move from the position in which it was retained by the incline on the feeler f . (See Fig. 7). This results in the rocking shaft d connected to lever b being turned, a

link *i* connected therewith being raised. The extension of lever arm *i'* acts upon the projecting stud *k*² of lever *k*, while otherwise if the link *i* has not been raised by the above described mechanism brought into action by the movement of the weft feeler, the arm *i'* will pass clear of it during its shifting at every revolution of the adjustable cam *l*. The adjustable cam *l* now operates the swinging lever *i*², causing the lever *k* to turn upon its point of support *s'*, the said lever *k* pushing the bobbin actuating levers *m* and *m'* forward and pushing the bobbin in a horizontal direction out of the supporting bars *z* into the shuttle *t*, thereby ejecting the empty bobbin through the wall *q*, (Fig. 1), of the shuttle.

In the foregoing description, two devices have been described which are requisite for replenishing spent bobbins by full ones in the shuttle.

I will now proceed to describe the arrangement by means of which the following on of further full bobbins from the magazine is effected, so as to be in a position ready for the next changing operation. As soon as the weft bobbin has been inserted in the shuttle, the springs *p* and *p'* will come into action, bringing the lever *k* and *i*² back to their original position. In the course of the return movement of the lever *k*, the pawl *x* is disengaged from ratchet wheel *z'* by means of the connecting rod *b'*, attached to the lever *k* so that the ratchet wheel can revolve to an extent corresponding to the thickness of a bobbin, in consequence of which, the racks *z*, together with the magazine of full bobbins mounted on the bars, can descend by one bobbin's thickness, so that a full bobbin is brought into position opposite binder *r*, ready for insertion in shuttle *t*. After the whole series of bobbins mounted upon the bars are used up, the said bars are raised by means of racks *z* and gear wheels *z'*, on spindle *d'* by rotating crank *g* by hand, when the magazine can be refilled.

What I claim and desire to secure by Letters-Patent is:—

1. In an automatic apparatus for exchanging and inserting bobbins in the shuttle for looms operating with one shuttle, comprising a batten or lay *r*, the arrangement of a shuttle *t*, provided with a lateral slot in front and a slotted wall *q* behind, a slotted binder *r'*, a thread guide *o'* and a bobbin frame *o* in connection with pressure levers *m* and *m'*, which serve to introduce the bobbin horizontally into the shuttle *t* and causing the ejecting of the empty bobbin from the shuttle through the slotted wall *q* of the batten and by the pressure of the full bobbin, the slot opening of the shuttle for the reception of the bobbin being parallel with the bottom rail of the batten and allowing the insertion of the bobbin from the front through the slot opening of the binder *r'*.

2. In a device for inserting and ejecting bobbins into and from shuttles, a yieldingly arranged weft detector or feeler *f*, which passes like a caliper over the bobbin as soon as it is almost exhausted and contains only a few courses of yarn, and gives, in connection with a lever *a*, by which moving a lever *b* is raised, and a rock shaft *d* turned, a leverage to a link *i*, thereby transferring the motion of a lever *i'* to a lever *k*, the latter pushing the new bobbin ready for insertion in the hopper into the shuttle *t*.

3. In a device for inserting and ejecting weft bobbins for looms, a hopper consisting in two graduated or sectional bars provided with lateral guide holes *z*² for the reception of a suitable number of weft bobbins and a ratchet wheel *x*² and ratchet pawls *x* and *x'* to operate said sectional rack bars to regulate the feed of the said bars, so as to replace every exhausted bobbin in the shuttle by a full bobbin in succession upon the advance movement of the batten or lay.

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

JOHANNES GABLER.

Witnesses:

JACOB ADRIAN,
H. W. HARRIS.