

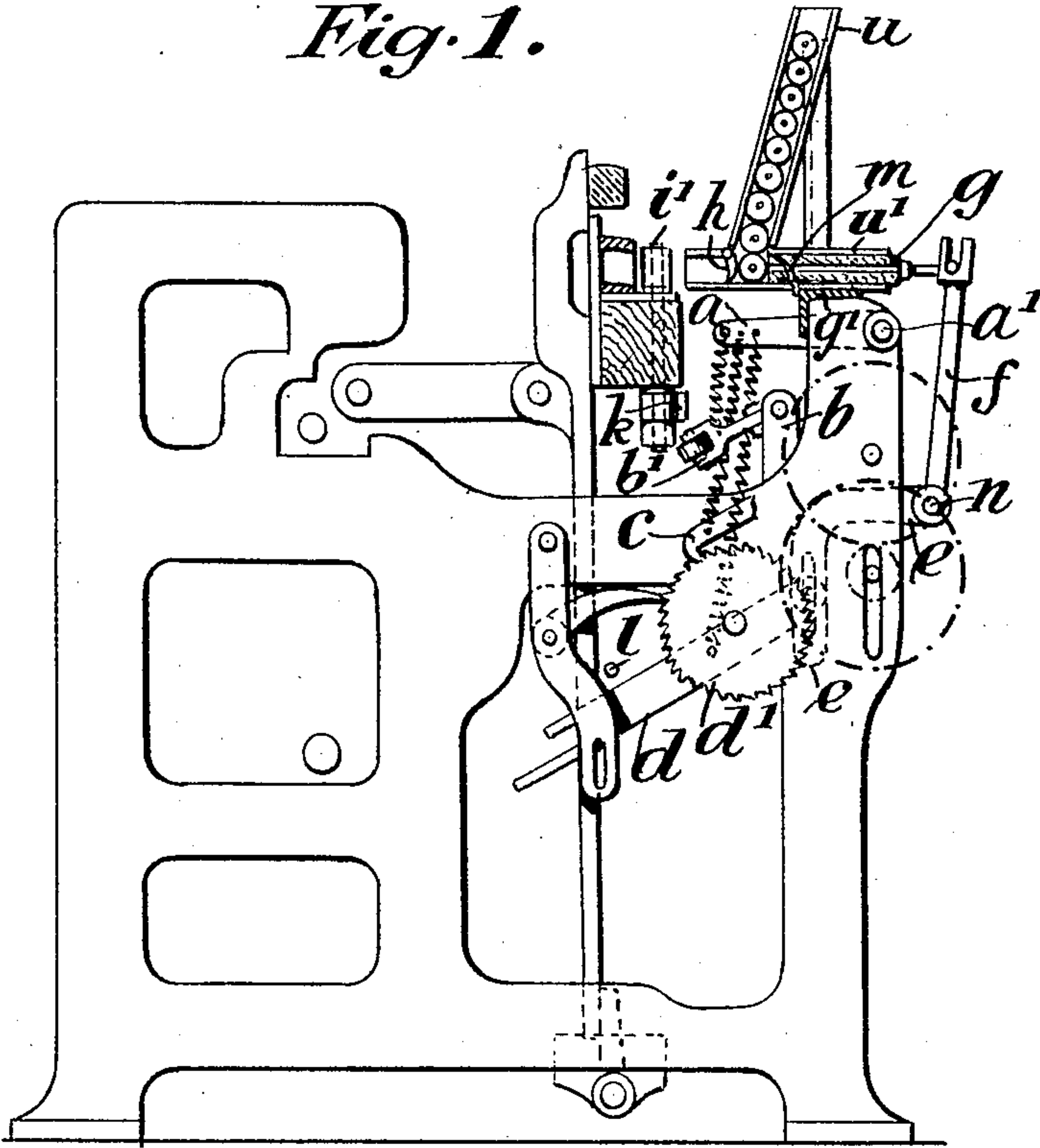
C. KLEIN.  
WEFT REPLENISHING MECHANISM FOR LOOMS.  
APPLICATION FILED JAN. 9, 1909.

924,996.

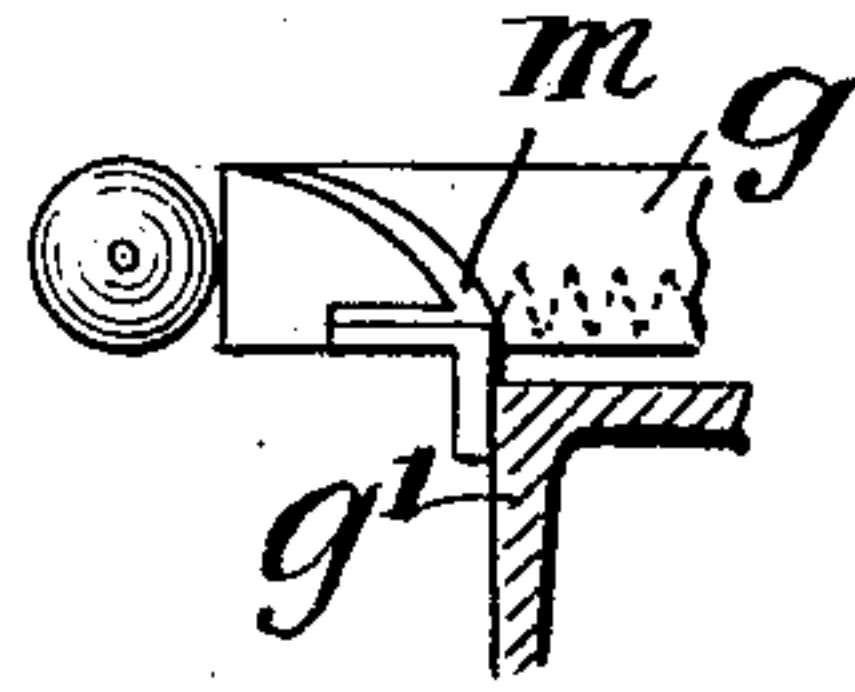
Patented June 15, 1909.

2 SHEETS—SHEET 1.

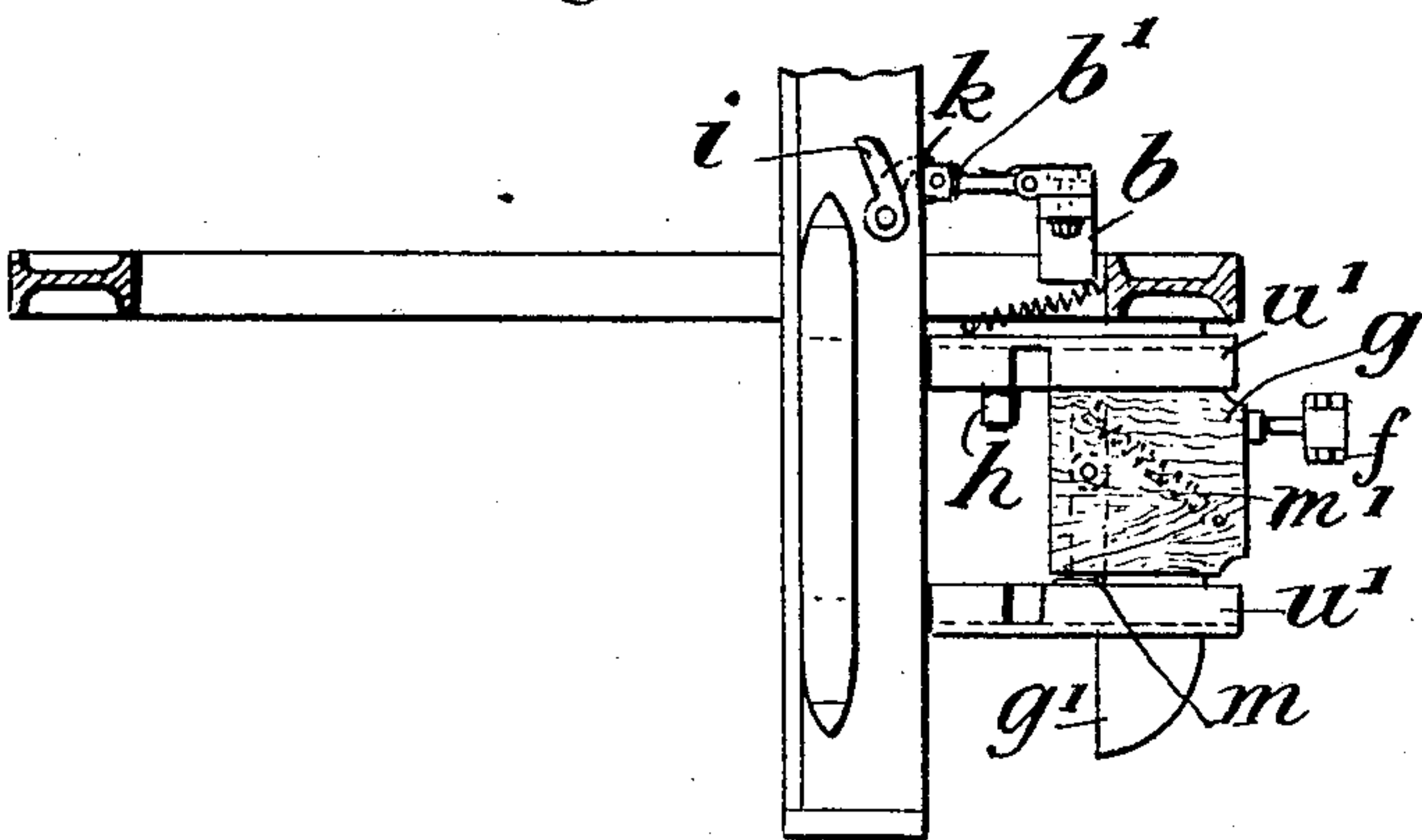
*Fig. 1.*



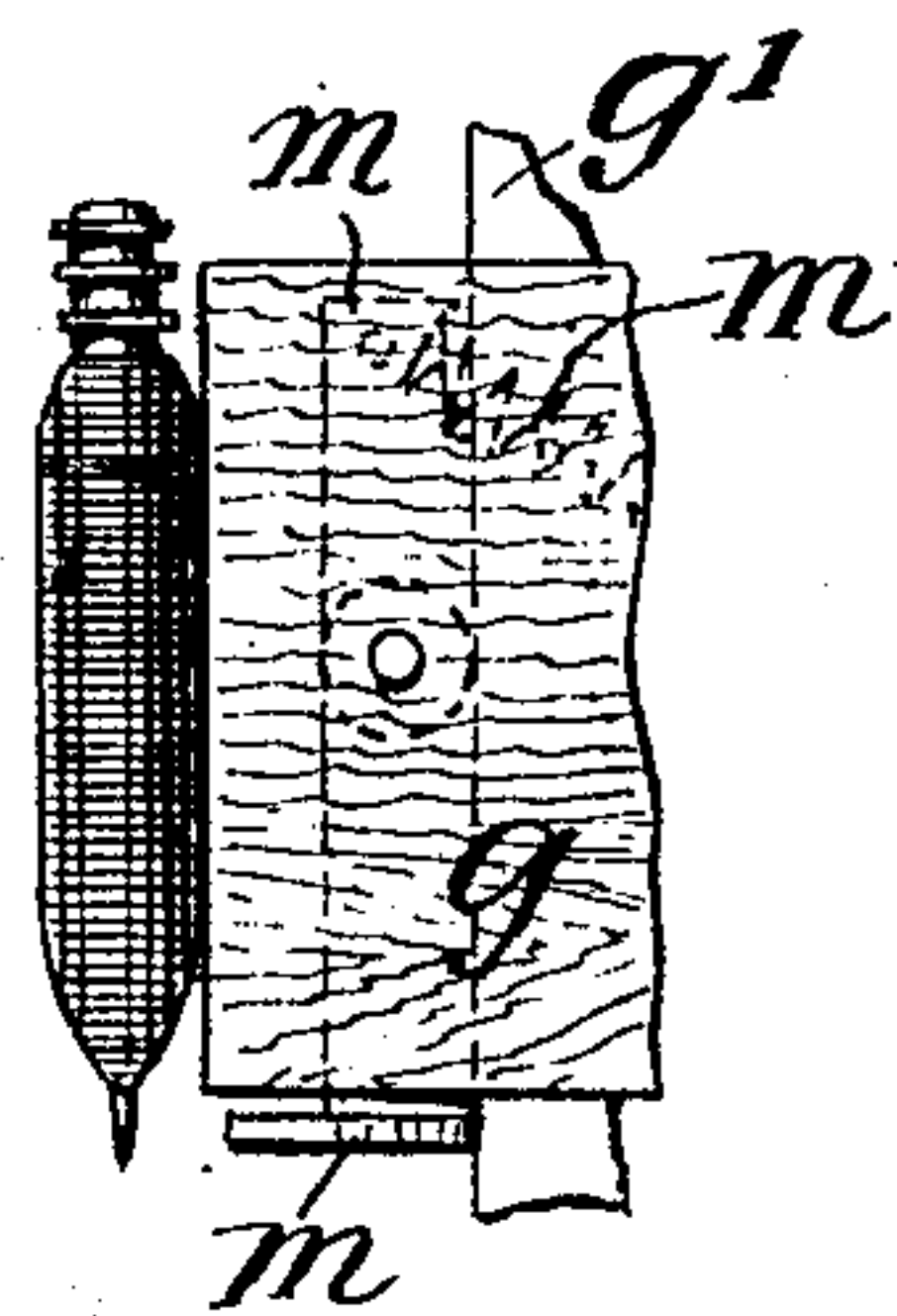
*Fig. 1<sup>x</sup>.*



*Fig. 2.*



*Fig. 2<sup>x</sup>.*



Witnesses  
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# WEFT REPLENISHING MECHANISM FOR LOOMS.

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2 SHEETS--SHEET 2.

A technical drawing of a mechanical device, likely a pump or engine component, showing a cross-section of a cylinder with a piston and connecting rod. The drawing is labeled with 'i' and 'k' and includes a spring mechanism.

A diagram of a magneto-electric machine. It features a central coil labeled  $u$  mounted on a vertical shaft. The coil is positioned between two vertical rectangular magnets, labeled  $u^1$  on the right and  $u^2$  on the left. The entire assembly is supported by a base labeled  $h$ . A wire is connected to the bottom of the coil and leads down from the base. On the left side, a component labeled  $i^2$  is shown with lines indicating electrical connection to the coil.

[illegible]

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# UNITED STATES PATENT OFFICE.

CARL KLEIN, OF GOTTENBORG, SWEDEN.

## WEFT-REPLENISHING MECHANISM FOR LOOMS.

No. 924,996.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed January 9, 1909. Serial No. 471,454.

*To all whom it may concern:*

Be it known that I, CARL KLEIN, a citizen of the German Empire, residing at Gottenborg, Sweden, have invented new and useful Improvements in Weft-Replenishing Mechanism for Looms, of which the following is a specification.

My invention relates to improvements in weft replenishing mechanism for looms with weft forks, and has for its object to simplify and render such mechanism more reliable in action and also readily applicable to looms with over pick or under pick, or fast or loose reeds.

My improved mechanism is fixed at one side of the loom frame and consists chiefly of a pirn, cop or the like magazine in connection with a carrier or slide which when the slay moves forward conveys a pirn, cop or the like from the magazine into the shuttle each time a weft thread breaks or the pirn, cop or the like is spent, the empty spindle or the pirn, cop or the like with broken thread being discharged through an opening in the wall of the shuttle box and of means for guiding the pirn, cop or the like accurately into the shuttle and for adjusting the latter. I attain these objects by the mechanism illustrated in the accompanying two sheets of drawings, in which—

Figure 1 is a side view partly in section of a loom provided with my improvements, and Fig. 2 a detached plan showing the position of the operating parts of the mechanism before the changing of the pirn, cop or the like. Fig. 1<sup>x</sup> and Fig. 2<sup>x</sup> are respectively a detached side view and a plan of a pirn or the like carrier or slide. Fig. 3 is a side view partly in section, and Fig. 4 a plan. Fig. 5 a front view detached showing the position of the parts during the changing of the pirn, cop or the like. Fig. 6 a detached back view.

Similar letters refer to similar parts throughout the several views.

In carrying out my invention and referring to the figures generally, I fix to one end of the weft fork rod *a'* a lever *a* while the other end has as usual secured an arm bearing against the weft fork slide. To the bracket *b* fixed to the loom side, I fulcrum an arm *b'* suspended, say by a spring from the lever *a* and

the free end of which carries an anti-friction roller, points downward and descends and rises in unison with the lever *a*.

In the lay I mount a vertical shaft *i'* to the top end of which is secured a finger *i* and to the bottom end a nose *k* and a lever *k'*, the latter being connected by a spring *o* to the lay. As the lever *b'* is raised its roller comes into the path of the nose *k* causing the shaft *i'* to turn and the finger *i* to bring the shuttle into its correct position in the box while when the lever *b'* descends its roller comes out of the path with the nose *k* and permits the spring *o* to turn the shaft *i'* and bring the finger out of the path of the shuttle.

The part of the arm *b* carrying the anti-friction roller is hinged to and under the influence of a spring on the part of the arm *b'* secured to the weft fork shaft *a'* so that should owing to the breakage of a driving belt or picking strap, the shuttle only so partly enters the shuttle box that the finger *i* when moved inward presses against the side of the shuttle the roller end of the lever *b'* is allowed to yield sidewise and thus prevent damage.

*c* is the ratchet pawl of the taking up motion suspended from the lever *a*, say by a spring.

At the front end of the loom frame and in front of the cloth beam I secure to a pin *n*, an angular arm *e* to the free end of which I pivot the arm *d* pointing toward the lay sword and at its free end suspended from the lever *a* by a spring. To the pin *n* I also secure an arm *f* the free end of which is connected to a carrier or slide *g*. *h* is a hinged finger which bears against the side of and the weight of which holds the lowermost of the pirns or the like in position in the guides until the said carrier or slide brings it into the shuttle when it will be raised out of the way by the forward moving pirn or the like and drop into its normal position again on the return of the carrier or slide.

To the lay sword I secure a stud *l* or I make use of the stud already existing thereon which in the usual manner actuates the pawl of the ratchet wheel *d'*. When the lay moves forward, the stud *l* engages in the forked end of the arm *d* (as shown in Fig. 3,



with arm *d* raised) by means of the lever *a* and spring connected therewith.

The taking up and letting off motion is actuated through the medium of the lifting pawl *c*. When the latter is raised the taking up catch or pawl disengages from the ratchet wheel *d'* and the tension of the cloth causes the latter to turn back as far as the expansion catch permits.

On the carrier or slide *g* I pivot a lever *m* one end of which is forked while to the other end I connect a spring *m'* secured to the slide *g* the said forked lever being adapted to guide into the shuttle, pirns or the like only partly full and thereby prevent same from being trapped at the tip through not entering the shuttle as readily as necessary.

Normally the lever *m* is pressed against the front edge of the support *g'* of the carrier or guide *g* but when the latter moves forward, the spring *m'* causes the forked end of the lever *m* to advance and carry the tip end of the pirn or the like to the shuttle while on the return movement of the carrier or slide *g* the lever *m* resumes its normal position.

*u* is the magazine from which the pirns or the like gravitate in front of the carrier or slide *g* one by one.

*u'* are channel sectioned rails which guide the pirns or the like horizontally to the shuttle. Both of the said rails are under the influence of a spring and so mounted as to recede in case of a picking strap or the like breaking if some object should come between the lay and the said rails.

As will be seen from Fig. 6 the pirns or the like rest in the magazine upon each other and the loose thread ends are placed round the back of the magazine toward the warp and there gripped between the coils of a spring *i*<sup>2</sup> secured at the side of the magazine.

The weft replenishing mechanism described operates as follows:—When the weft is spent or the weft fork drops, the latter is caught by the weft hammer in the ordinary way and the weft fork slide then being moved back through the medium of the arm bearing against it, the weft fork rod *a'* receives a turn and raises the lever *a* and arm *b'* and also the pawl *c* and arm *d* by springs connected with the lever *a*. On the return movement of the weft hammer the weight of the said parts causes them to return to their normal positions. On the forward movement of the lay, the taking up motion is rendered inoperative, the stud *l* on the lay sword engages with the forked end of the arm *d* and pushes the same backward and the angular lever *e* and arm *f* push the carrier or slide *g* forward. The finger *h* turns and frees the path toward the shuttle, and the nose *k* having at the last moment come into contact with the arm *b'*, the finger *i* receives a  $\frac{1}{4}$  of a turn and brings the shuttle into its correct position for receiving the

pirn or the like, Figs. 3, 4 and 5, which is then pushed into the shuttle by the carrier or slide *g* and held fast therein by a spring. When the shuttle carries the weft through the shed, the weft is in the selfthead and its end is tensioned between the spring *i*<sup>2</sup> and the warp side. While the carrier or slide *g* pushes a pirn or the like into the shuttle the other pirns or the like in the magazine *u* rest upon the carrier or slide. As soon as the lay is moving back, the lever *a* begins to descend and causes the nose *k* to lose contact with the arm *b'* the spring *o* causing the shaft *i'* to turn and move back the finger *i* and release the shuttle, the pawl *c* then being in gear again with the ratchet wheel, the arm *d* lowered, the carrier or slide *g* moved back and a fresh pirn or the like will drop in front of the carrier or slide. During weaving, the said weft end remains tensioned and when it reaches the temple is torn at the selvage of the fabric by the temple cover which dispenses with the necessity of a mechanically operated cutter.

I claim:

1. In a weft replenishing mechanism for looms, a stationary magazine, a pirn carrier, guides below the exit end of the said magazine for the said carrier to move in and also adapted to receive and support each end of the pirn as they drop from the said magazine and a member hinged in front of the magazine exit to hold the pirn in front of the said carrier, all combined substantially as and for the purpose set forth.

2. In a weft-replenishing mechanism for looms, a stationary magazine, a pirn carrier, guides below the exit end of the said magazine for the said carrier to move in and also adapted to receive and support each end of the pirn as they drop from the said magazine, and a forked lever fulcrumed to the front end of the said carrier and adapted to engage the front end of the pirn in the said guides, all combined substantially as and for the purpose set forth.

3. In a weft-replenishing mechanism for looms, a stationary magazine, a pirn carrier, guides below the exit end of the said magazine for the said carrier to move in and also adapted to receive and support each end of the pirn as they drop from the said magazine, the thread end of each pirn in the magazine located around the back of the latter and means for holding it in position, all substantially as and for the purpose set forth.

4. In a weft replenishing mechanism for looms, a stationary magazine, a pirn carrier, guides below the exit end of the said magazine for the said carrier to move in and also adapted to receive and support each end of the pirn as they drop from the said magazine, means for adjusting the shuttle in the box longitudinally in relation to the pirn in the said guides, comprising a shaft mounted



in the lay, having at its top a finger and at its bottom a nose and an arm fulcrumed to the loom side and adapted to be raised and lowered in and out of the path of the said  
5 nose, all substantially as and for the purpose set forth.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

CARL KLEIN.

Witnesses:

CARL WIED,  
J. G. SAUTER.