

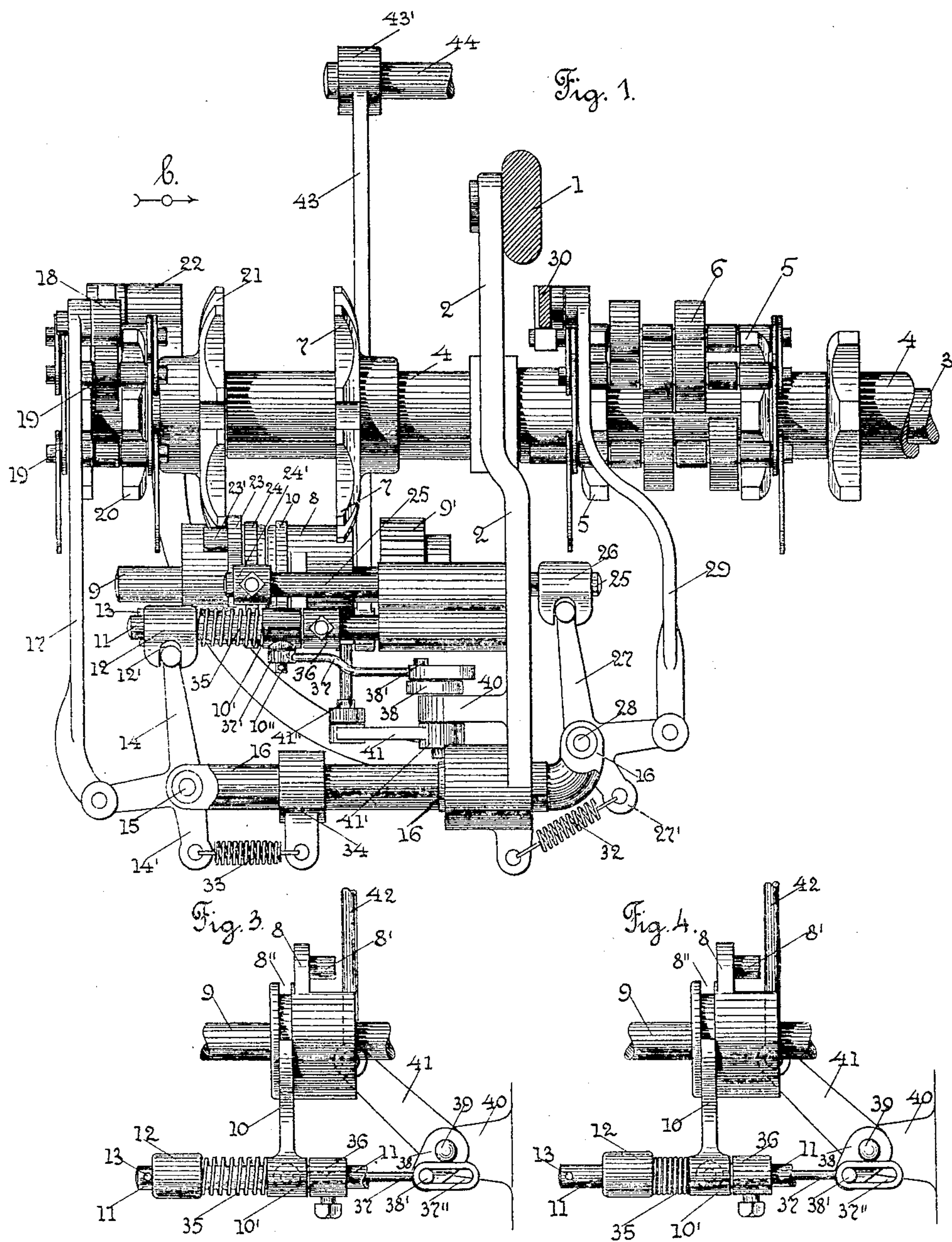
No. 803,844.

PATENTED NOV. 7, 1905.

B. F. McGUINNESS.
LOOM PATTERN CHAIN MECHANISM.

APPLICATION FILED MAY 27, 1905.

2 SHEETS—SHEET 1.



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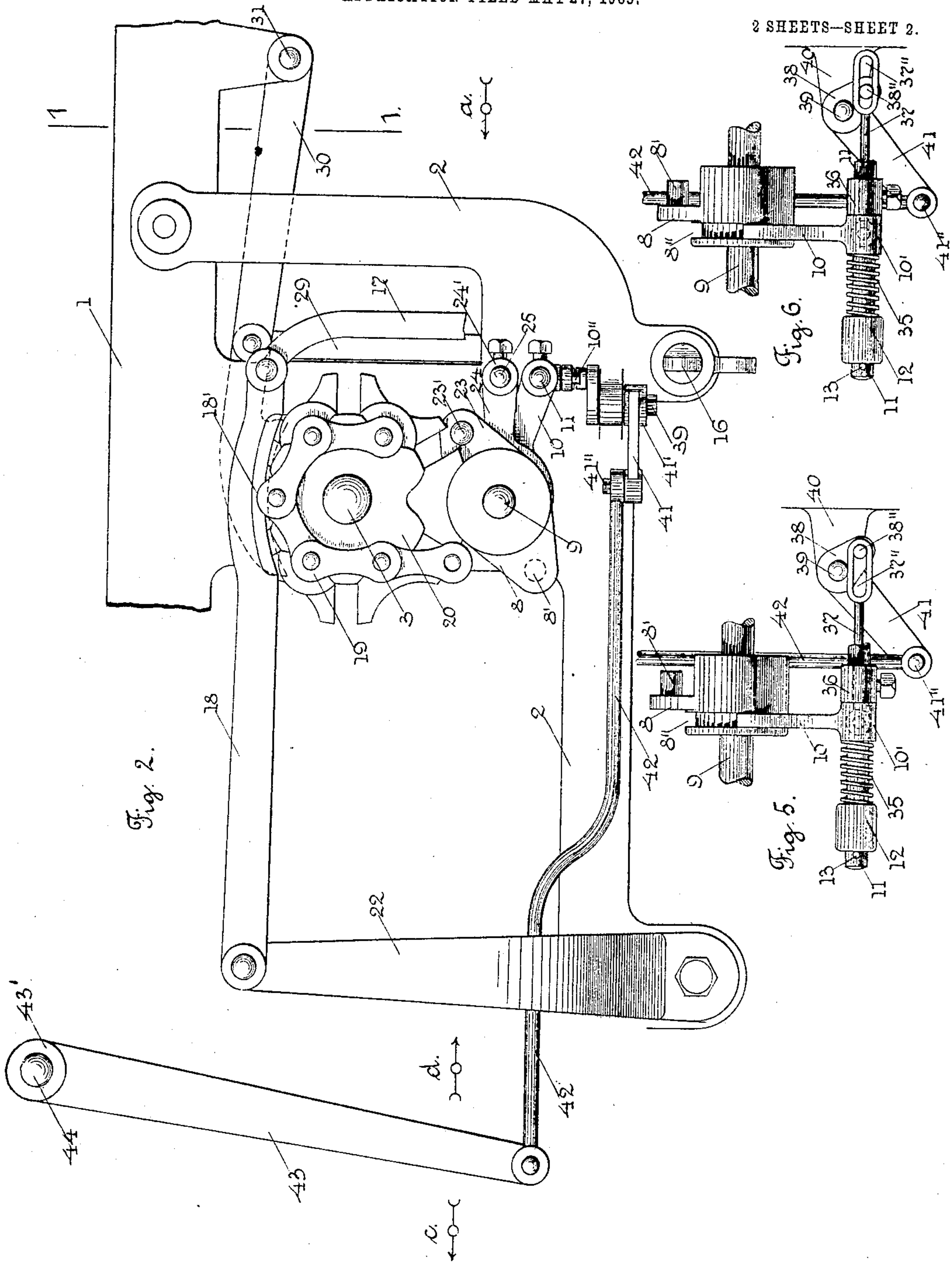
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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LOOM PATTERN-CHAIN MECHANISM.

No. 803,844.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed May 27, 1905. Serial No. 262,533.

To all whom it may concern:

Be it known that I, BENJAMIN F. McGUIN-
ESS, a citizen of the United States, residing at
Worcester, in the county of Worcester and
5 State of Massachusetts, have invented cer-
tain new and useful Improvements in Loom
Pattern-Chain Mechanism, of which the fol-
lowing is a specification.

My invention relates to that class of looms
10 which are provided with a multiplier pattern-
chain in addition to the box pattern-chain.

It will be understood that by means of the
multiplier pattern-chain certain bars of the
box pattern-chain of the drop-box indicat-
15 ing mechanism may be repeated without con-
structing successive similar bars in said box
pattern-chain.

My present invention relates particularly
to a supplemental mechanism adapted to be
20 combined with any ordinary form of multi-
plier mechanism by means of which the move-
ment of the box pattern-chain may be
stopped at any desired time and for any de-
sired length of time, the rest of the loom con-
25 tinuing to operate in the usual way.

The object of my invention is to provide a
supplemental mechanism of simple construc-
tion and operation adapted to be combined
with a box pattern-chain mechanism and a
30 multiplier pattern-chain mechanism of any
ordinary construction and operation and
which can be operated manually by the
weaver or automatically to throw out of ac-
tion the mechanism which operates the box
35 pattern-chain, to stop the operation of said
pattern-chain at any desired time and for
any length of time, and to put into operation
the box pattern-chain mechanism.

My improvements may be combined with
40 any loom of the class referred to and is de-
signed particularly for looms for weaving
blankets, table-cloths, &c., in which there is
a long plain weave between two borders.

In using my improvements I can adapt
45 them to be operated manually by the weaver
or to be operated automatically through con-
nections to some driven part of the loom, and
preferably to the driving mechanism for the
measuring-dial.

50 I have shown in the drawings my improve-
ments combined with a well-known type of
drop-box pattern-chain mechanism and mul-
tiplier pattern-chain mechanism operated by

pin-wheels and star-wheels and such as
shown and described in United States Let- 55
ters Patent No. 413,369.

I have only shown in the drawings a de-
tached part of the drop-box pattern-chain
mechanism and the multiplier pattern-chain
mechanism with my improvements com- 60
bined therewith sufficient to illustrate the
nature thereof.

Referring to the drawings, Figure 1 is a
sectional front view of a box pattern-chain
mechanism and a multiplier pattern-chain 65
mechanism with my improvements applied
thereto, taken at a point indicated by line 1
1, Fig. 2, looking in the direction of arrow *a*,
Fig. 2. Fig. 2 is an end view of the parts
shown in Fig. 1 looking in the direction of ar- 70
row *b*, same figure. Some of the parts shown
in Fig. 1 are not shown in this figure. Fig. 3
is a detached plan view of my attachment.
Fig. 4 corresponds to Fig. 3, but shows a dif-
ferent position of some of the parts. Fig. 5 75
shows another position of some of the parts
shown in Fig. 3, and Fig. 6 shows still another
position of some of the parts shown in Fig. 3.

The drop-box pattern-chain mechanism
and the multiplier pattern-chain mechanism 80
(shown in the drawings) are of the usual and
well-known construction and operation and
are fully shown and described in said patent,
and therefore I will only briefly describe the
same herein. 85

In the accompanying drawings, 1 is a por-
tion of a loom-frame.

2 is a stand on which are supported the sev-
eral parts of the pattern-chain indicating
mechanism. 90

3 is a shaft suitably supported.

4 is a sleeve mounted on the shaft 3 and
having fast thereon the pattern-chain barrel
or cylinder 5, having thereon the drop-box
pattern-chain 6, made up of links and bars, 95
said bars carrying rolls and tubes in the ordi-
nary way.

Fast on the sleeve 4 is a star-wheel 7, which
is adapted to be operated by a pin-wheel 8,
the hub of which is splined on a shaft 9, 100
driven through a gear 9', to rotate with said
shaft and to move longitudinally thereon
and carry the pin 8' on the pin-wheel 8 into
and out of engagement with the star-wheel 7.
The pin-wheel 8 has an annular groove 8'' in 105
the hub portion thereof, into which extends

the forked end of an arm 10, (see Fig. 3,) mounted on a longitudinally-moving shaft 11, suitably supported. On the end of the shaft 11 is loosely mounted a collar 12, held
 5 on the shaft by a split pin 13. The collar 12 has a groove or recess 12' therein to receive one end of an angle or bell-crank lever 14, pivoted at 15 on a stationary rod 16. The
 10 other arm of the bell-crank lever 14 is pivotally connected to the lower end of a connector 17, and the upper end of said connector 17 is pivotally connected to an indicator-lever 18, which has a foot 18' thereon, which extends
 15 over the multiplier pattern-chain 19 (see Fig. 2) on the pattern-cylinder 20, which is loosely mounted on the shaft 3 and has connected therewith a star-wheel 21.

The indicator-lever 18 is pivotally mounted on an upright stand 22, secured to the
 20 frame or stand 2. (See Fig. 2.) The star-wheel 21 is operated by a pin 23' on a pin-wheel 23, splined on the driven shaft 9 and adapted to rotate with said shaft and move longitudinally thereon. The hub portion of
 25 the pin-wheel 23 has an annular groove therein to receive the forked end of an arm 24, having a hub portion 24' fast on a longitudinally-moving shaft 25, suitably mounted. (See Fig. 1.)

30 The shaft 25 has at its opposite end a collar 26, fast thereon, which has a recess or groove therein to receive one end of an angle or bell-crank lever 27. The bell-crank lever 27 is pivotally mounted at 28 on the rod 16.
 35 The opposite arm of the angle-lever 27 has pivotally connected thereto the lower end of a connector 29. The upper end of the connector 29 is pivotally connected to an indicator-lever 30, which is pivoted at 31 on the
 40 frame 1 and extends over indicating-surfaces on the drop-box pattern-chain 6, which surfaces are in this instance mounted on the projecting ends of the bars forming a part of the pattern-chain. (See Fig. 1.)

45 A spring 32, connected to the projection 27' on the angle-lever 27 and to a stationary part of the frame, acts to move the angle-lever 27 and the sliding shaft 25 and move the pin-wheel 23 through the arm 24 out of engagement with the star-wheel 21 when the
 50 indicating-surface passes from under the indicator-lever 30.

A spring 33, connected with a projection 14' on the angle-lever 14 and with a stationary
 55 collar 34, acts to move the angle-lever 14 and the sliding shaft 11 and move the pin-wheel 8 through arm 10 out of engagement with the star-wheel 7 when a roll on the multiplier pattern-chain 19 passes from under
 60 the indicator-lever 18.

All of the above-described parts are of the usual and well-known construction and are operated in the usual and well-known way.

I will now describe my improvements,
 65 which form a supplemental mechanism and

are in this instance combined with the parts above described and by means of which the pin-wheel 8, which drives the star-wheel 7 of the box pattern-chain 6, may be manually or
 70 automatically moved into its inoperative position at the time desired and held there, so that it will not operate the star-wheel 7, and consequently the box pattern-chain will remain at rest until the pin-wheel is released to
 75 allow it to operate the star-wheel 7 and the box pattern-chain.

On the sliding shaft 11 is mounted a spiral expansion-spring 35 intermediate the hub 10' of the forked arm 10 and the collar 12, both
 80 loose on the longitudinally-sliding shaft 11. A collar 36 is fast on the longitudinally-moving shaft 11 and is adapted to be engaged by the hub 10' of the arm 10 to limit the longitudinal motion of said hub on the sliding
 85 shaft 11. Extending down from the hub 10' of the arm 10 is a pin 10'', on which is loosely mounted the hub 37' on one end of a link 37. The other end of the link 37 has a longitudinal opening 37'' therein, through which is
 90 adapted to extend a pin 38' on a crank-arm 38, fast on the upper end of a rock-shaft 39, mounted in a stand 40, secured to the stand 2. (See Fig. 1.) On the lower end of the rock-shaft 39 is fast the hub 41' on an arm 41.
 95 The outer end of the arm 41 carries a pin 41'', to which is pivotally connected one end of a connector 42. (See Fig. 2.) The other end of the connector 42 is pivotally connected in this instance to the lower end of a vertically-extending lever 43. The upper end of said
 100 lever 43 has a hub 43' thereon, which is pivotally mounted on a stationary rod 44.

The operation of my supplemental mechanism will be readily understood by those
 105 skilled in the art.

When it is desired to stop the movement of the box pattern-chain, the weaver moves the arm or lever 43 in the direction indicated
 110 by arrow c, Fig. 2, and into the position shown in Fig. 2. The movement of the lever 43 through connector 42, arm 41, rock-shaft 39, crank-arm 38, and link 37 will move, through the hub 10' on the arm 10 and the spring 33
 115 between said hub and the collar 13, the shaft 11 to the left, Fig. 1, and into the position shown to move the pin-wheel 8 out of engagement with the star-wheel 7. The loom will continue to operate; but the star-wheel 7 and the box pattern-chain will remain stationary.

In case a roll comes under the indicator-lever 18 of the multiplier pattern-chain 19, the shaft 11 being held from endwise movement, the spring 33 on said shaft, through the
 120 raising of the indicator-lever 18 and the movement of the bell-crank lever 14, will be compressed, as shown in Fig. 4, and the operation of the indicator-lever 18 will not be
 125 interfered with.

When it is desired to have the box pattern-chain operate, the lever 43 is moved in the
 130

opposite direction, (indicated by arrow *d*, Fig. 2,) and through connector 42, arm 41, and rock-shaft 39 the crank-arm 38 will be moved into its opposite position, (shown in Fig. 5,) in which position the link 37 is free to move longitudinally and with it shaft 11 to move the pin-wheel 8, through arm 10, into a position to operate the star-wheel 7, as shown in Fig. 6, when a roll comes under the indicator-lever 18 of the multiplier pattern-chain 19. The spring 33 is strong enough to hold the collar 12 and cause the shaft 11 to move longitudinally when the crank-arm 38 is not in position to hold the link 37—that is, in the ordinary operation of the loom, the expansion-spring 33 will hold the hub 10' on the arm 10 and the collar 12 on the shaft 11 both in their proper relative positions, so that communication intermediate the box pattern-chain and the multiplier pattern-chain may be made in the ordinary way.

In case it is desired to have my supplemental mechanism operated automatically at predetermined times and for predetermined lengths of time the connector 42 may be connected with some driven part of the loom—for instance, the operating mechanism of the measuring-dial.

It will be understood that the details of construction of my improvements may be varied, if desired, and they may be used in connection with pattern mechanisms which have two or more pattern-chains.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In the pattern-chain mechanism of a loom, the combination with a pin-wheel and star-wheel and a longitudinally-sliding shaft, of a forked arm engaging a pin-wheel and loosely mounted on said shaft, a collar loose on said shaft, and a spring intermediate said forked arm and said collar.

2. In a loom, the combination with the box pattern-chain, the multiplier pattern-chain, and intermediate connections, and pin-wheel and star-wheel mechanism, of means for moving the pin-wheel of the box pattern-chain mechanism out of engagement with its star-wheel, to stop the box pattern-chain at any desired time without stopping the multiplier pattern-chain.

3. In a loom, the combination with the box pattern-chain, the multiplier pattern-chain, and intermediate connections, and pin-wheel and star-wheel mechanism of means for moving the pin-wheel of the box pattern-chain mechanism out of engagement with its star-wheel, to stop the box pattern-chain at any desired time without stopping the multiplier pattern-chain, said means comprising a longitudinally-moving shaft, a forked arm engaging the hub of the pin-wheel and loosely mounted on said shaft, a fast and a loose collar on said shaft, an expansible spring confined between said hub and said loose collar, and mechanism for operating said means.

4. In a loom, the combination with a box pattern-chain, and a multiplier pattern-chain, and pin-wheel and star-wheel mechanism, and a forked arm engaging the pin-wheel of the box pattern-chain mechanism, said arm loosely mounted on a longitudinally-sliding shaft, and said shaft, a collar loose thereon, and a spring intermediate said collar and forked arm, of mechanism connected with said forked arm to move it, and move the pin-wheel engaged by it, out of engagement with its star-wheel, to stop the box pattern-chain.

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Witnesses:

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