

W. H. CLEGG.
TAKE-UP MOTION FOR LOOMS.
APPLICATION FILED MAY 22, 1908.

958,597.

Patented May 17, 1910.

2 SHEETS—SHEET 1.

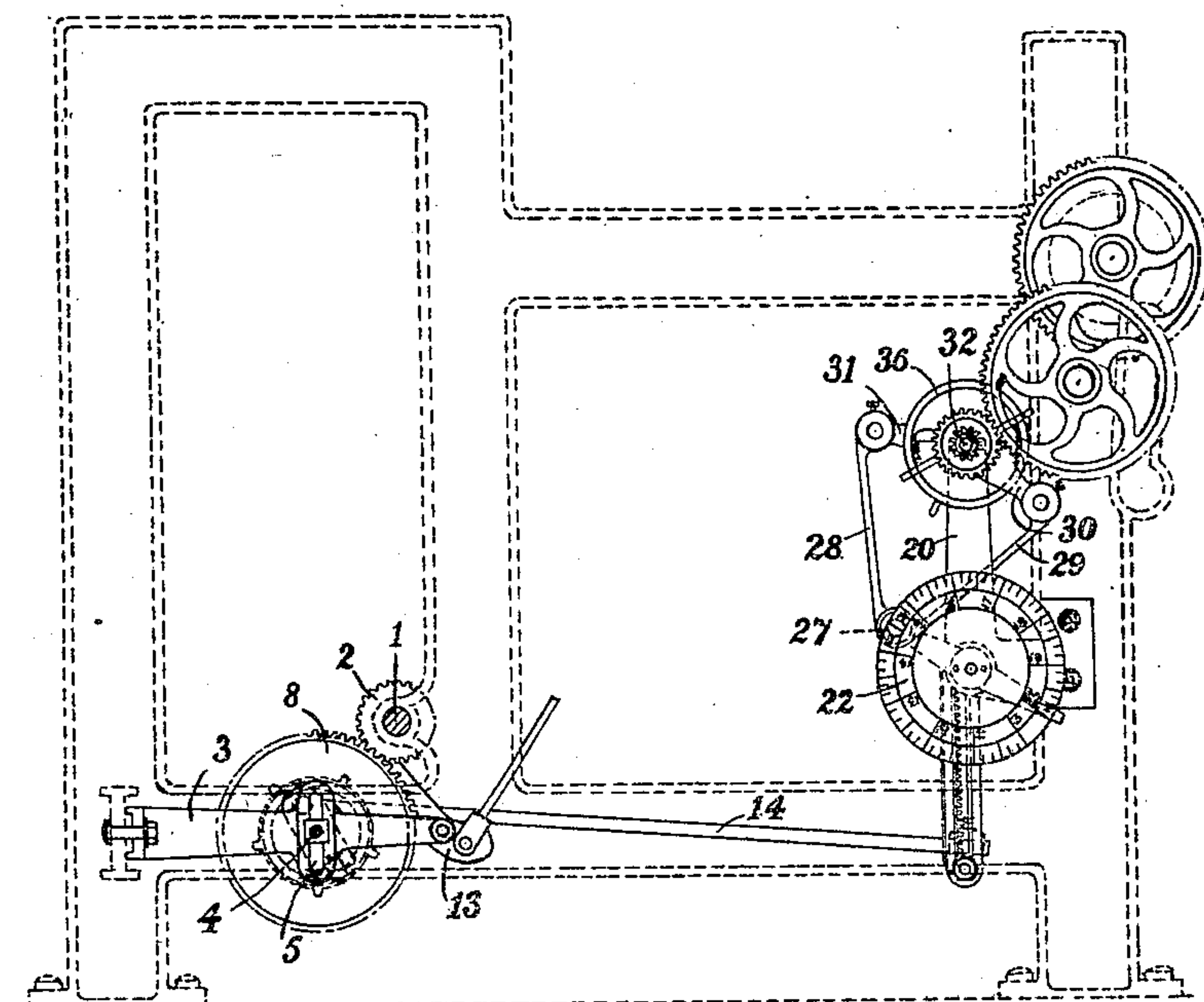


Fig. 1.

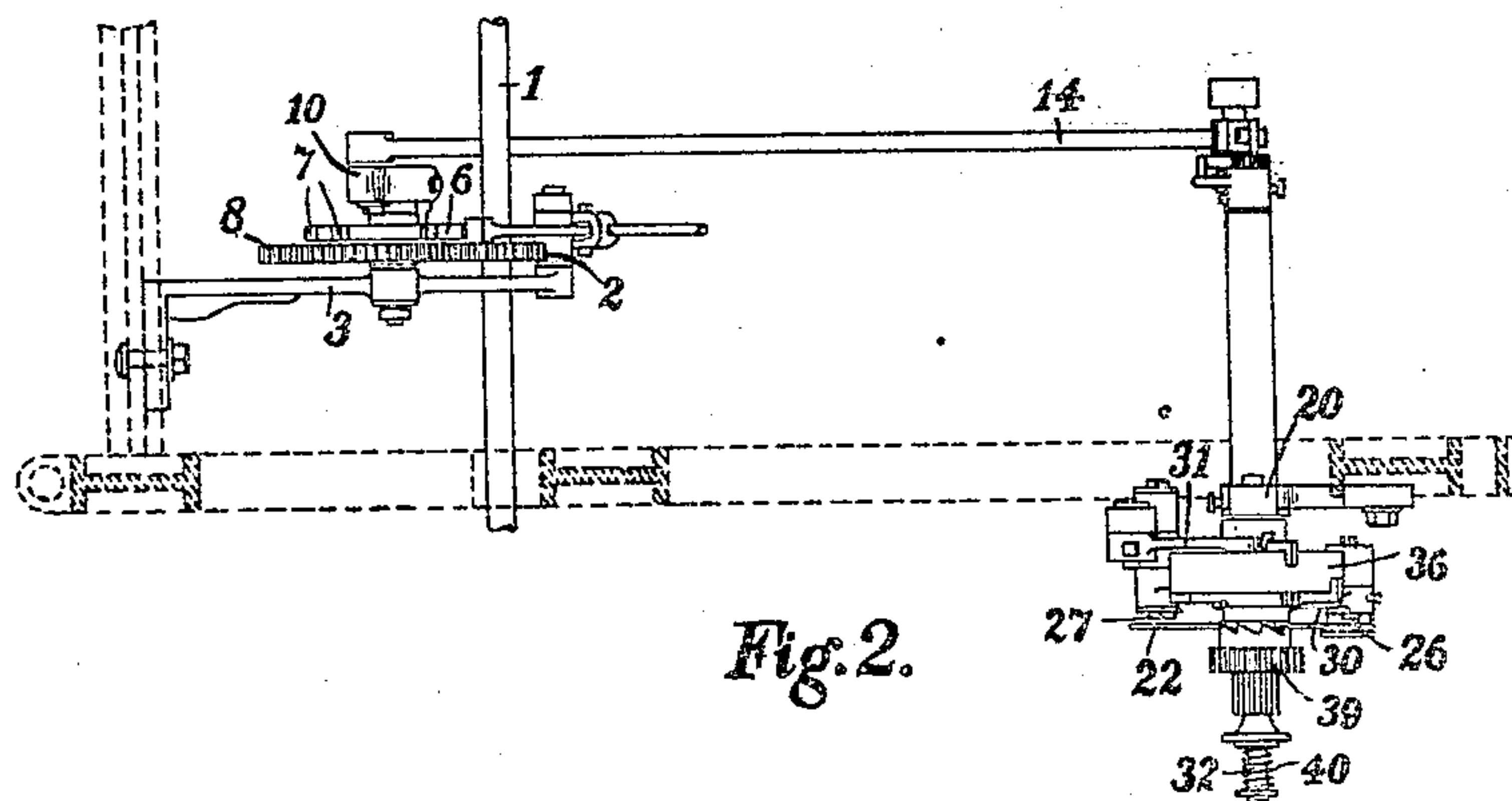


Fig. 2.

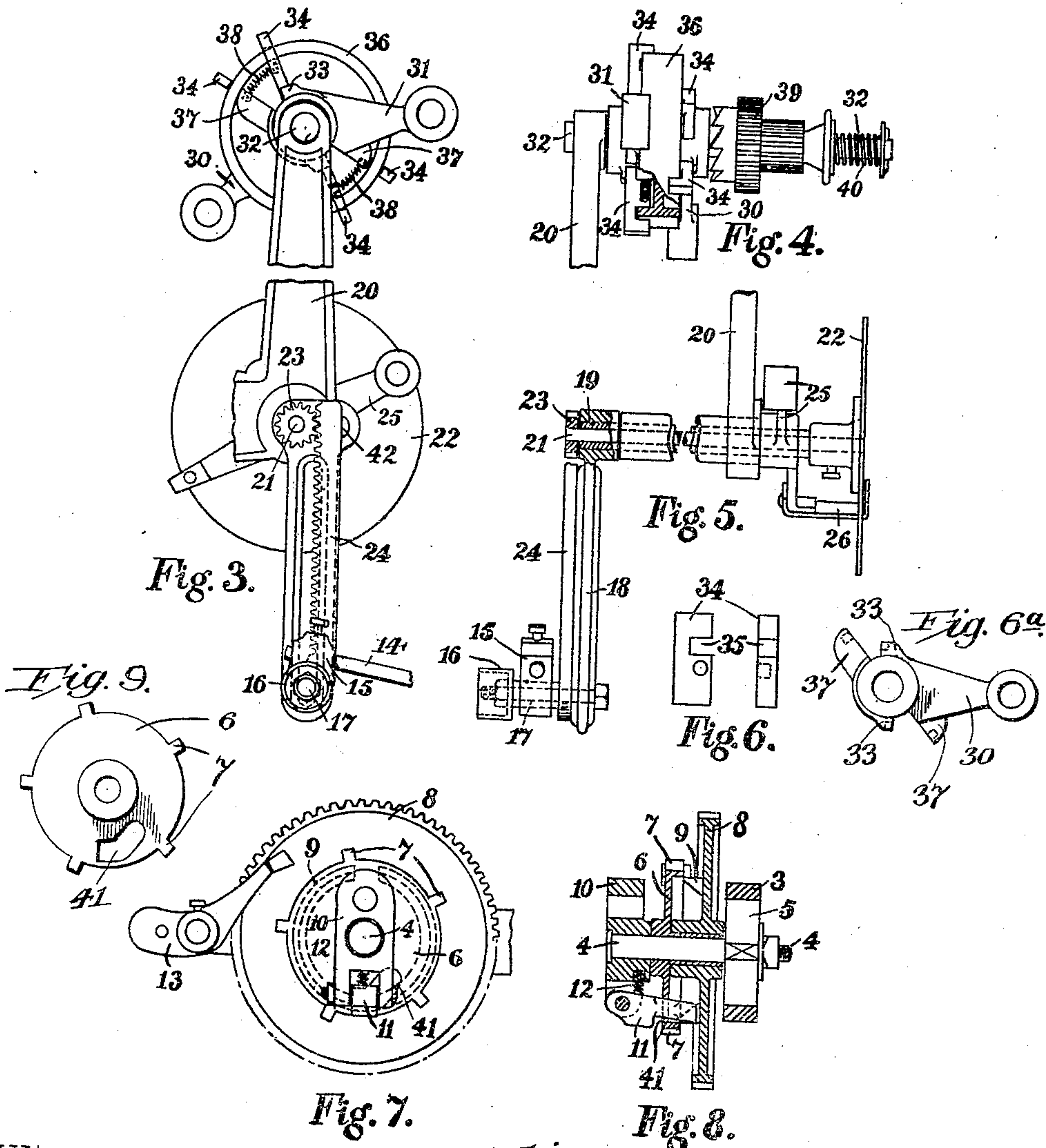
Witnesses
Chas. R. Rader
Fannie Hise

Inventor:
William Henry Clegg,
by Dodge and Sons,
Associate Atty.

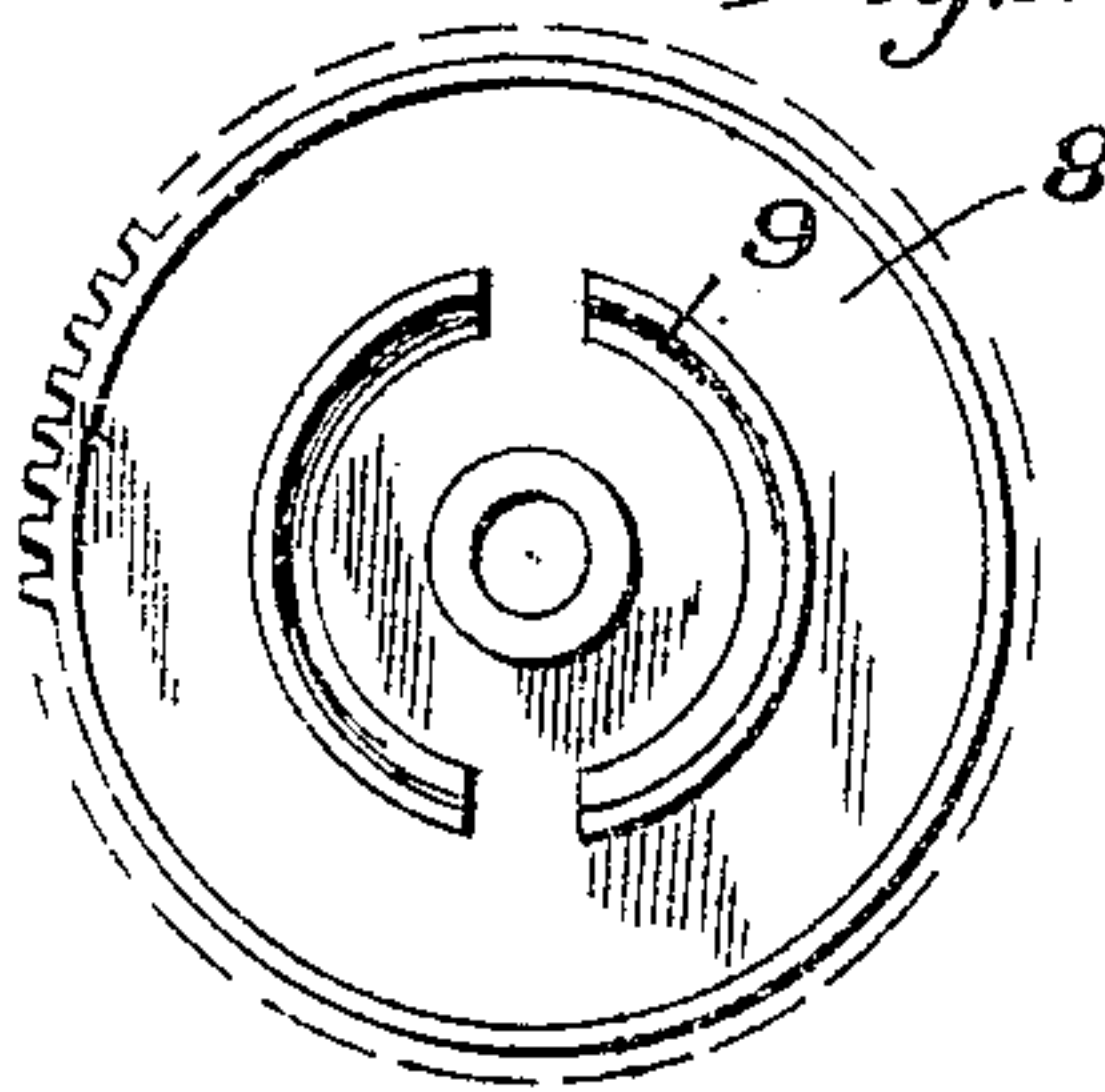
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C. M. Raeder.
Fannie Wise



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UNITED STATES PATENT OFFICE.

WILLIAM HENRY CLEGG, OF BURNLEY, ENGLAND.

TAKE-UP MOTION FOR LOOMS.

958,597.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed May 22, 1908. Serial No. 434,380.

To all whom it may concern:

Be it known that I, WILLIAM HENRY CLEGG, a subject of the King of Great Britain, residing at Burnley, in the county of Lancaster, in the Kingdom of England, engineer, have invented certain new and useful Improvements in and Connected with Take-Up Motions for Looms, for which application has been made in Great Britain, No. 27,587, dated December 14, 1907.

This invention relates to the means employed to take up and stop the take up of the cloth as it is woven in weaving looms.

The object of the invention is to provide a suitable mechanism whereby cloth having any desired number of picks or threads in a given distance of the cloth may be woven without the use of numerous change wheels, the mechanism being also adapted to prevent the cloth being taken up and thick and thin places being formed in the cloth when the weft is broken.

The invention will now be more particularly described with reference to the accompanying drawings, in which,

Figure 1 is a side elevation of part of a loom fitted with the invention; Fig. 2 is a plan; Fig. 3, is an elevation of the adjusting device and the mechanism by means of which movement is imparted to the wheels which drive the cloth beam or sand roller, the elevation being taken from the side opposite to that of Fig. 1, and parts being omitted for the sake of clearness; Fig. 4, is a side elevation partly sectional of the mechanism shown in the upper part of Fig. 3; Fig. 5, is a corresponding side elevation of the mechanism shown in the lower part of Fig. 3; Fig. 6, is a detail view of a part of the clutch device; Fig. 6^a, is a detail view of a part of the clutch device; Fig. 7, is an elevation of the stop device on an enlarged scale taken from the side opposite to that of Fig. 1; Fig. 8, is a sectional side elevation of the stop device, the plane of section passing through the center line of the shaft; Fig. 9, is a detail view of a part of the stop device; Fig. 10, is a detail view of a part of the stop device.

In carrying out my invention I affix to the tappet shaft 1, Figs. 1, 2, or other convenient shaft, a pinion 2, and to the framework of the loom a bracket 3 is fixed carrying a stud 4 adjustable in the slot 5 of this bracket. Upon this stud 4, Figs. 7, 8, a circular plate 6 (see Fig. 9) having projections

7 upon its periphery and also formed with a curved slot 41, is loosely mounted. Upon the boss of this plate 6 a wheel 8 is mounted so as to revolve freely, which wheel 8 is provided on its face or side with a ring 9 in which are two slots (see Fig. 10). The diameter of the wheel 8 which gears with the pinion 2 is preferably so proportioned that it shall revolve once for every four or five or other suitable number of revolutions of the crank shaft of the loom. Upon the stud 4 a crank arm 10 is also loosely mounted provided at one end with a swing catch 11 pressed outward by means of the spring 12. This catch 11 projects through the curved slot 41 in the plate 6 and engages in one of the slots in the ring 9 of the wheel 8. Thus if the circular plate be held and the wheel 8 rotated, the swing catch will be drawn inward by the curved slot in the plate 6 and out of engagement with the slot in the ring 9. The wheel 8 and the crank 10 thus become independent of each other.

A catch 13 is pivotally mounted at the extremity of the bracket 3 adapted to engage with the projections 7 of the circular plate.

The crank 10 is connected by means of the connecting rod 14 to a link 15, Figs. 3, 5, loosely mounted on a sleeve 16 arranged on a stud 17 which stud is adjustably mounted in the slotted swing arm 18 attached to a tubular shaft 19 supported in a bearing of the bracket 20 attached to the framework of the loom.

Within the tubular shaft 19 another shaft 21 is placed provided at one end with an index plate 22 and at the other end with a small pinion 23 gearing with a rack 24 mounted on the stud 17 and held in engagement with the pinion by a projection 42. An arm 25 is also mounted on the tubular shaft 19 and provided at one end with a pointer 26 working over the index plate 22 the other end of this arm being provided with a stud 27, Fig. 1, on which two links 28, 29, are loosely mounted, the opposite ends of which are attached to two swing arms 30, 31, Figs. 3, 4, loosely mounted on a stud 32 fixed to a projecting arm of the bracket 20. These swing arms are provided with projections 33 behind which loose pieces 34 having recesses 35, Fig. 6, are placed, the recesses 35 being adapted to fit loosely on the machined surface of the rim of a pulley 36, Figs. 3, 4, loosely mounted on the stud 32. The swing arms 30, 31, are also provided

with projections 37 recessed so as to carry springs 38 pressing on to the loose pieces 34. The swing arms are arranged on opposite sides of the machined surface of the pulley 5 36 and project in opposite directions. By this arrangement the movement of the swing arms causes the loose pieces 34 to alternately grip the rim of the pulley when turned in one direction and to slide freely over the 10 rim when turned in the opposite direction, for when the swinging arm 30, moves in the driving direction, the projection 33 on said arm pressing against the lower part of the corresponding loose piece 34 causes this piece 15 to be tilted, and therefore the recess 35 to bind on the rim of the pulley. At the same time the swinging arm 31 is moving in the opposite direction and the loose piece 34 controlled thereby is moved backward by the 20 spring 38 which spring acting on the loose piece close to the rim of the pulley does not tend to tilt it, but allows it to slide around the rim of the pulley. On the reversal of the motion the piece 34 controlled by the arm 31 25 drives the pulley while the other piece 34 is free therefrom. Thus a practically continuous forward motion is imparted to the pulley.

The boss of the pulley 36 is provided with 30 clutch teeth adapted to engage with clutch teeth formed on the end of two or more pinions 39 which are cast in one piece, the number of teeth on the pinions being preferably multiples of each other, the clutch 35 teeth being kept in contact with each other by means of a spring 40. Either of these pinions is geared into a train of wheels imparting the movement to the cloth beam or sand roller.

40 The operation of the device is as follows:—The nut of the stud 17 which is preferably arranged in a recess of the sleeve 16 to prevent any tampering, is loosened and the index plate 22 turned so that the index 45 number corresponding to the number of picks required in a given distance of the cloth coincides with the pointer 26. The rotation of the index plate adjusts the position of the stud 17 in the arm 18 by means of the 50 pinion 23 and rack 24. The nut on the stud 17 is then tightened up and the loom set in motion. The take up motion is driven from the tappet shaft or other convenient shaft of the loom through the pinion 2 gearing into 55 the wheel 8 actuating the crank 10 through the spring catch 11, the movement of the crank being transmitted by the connecting rod 14 to the swing arm 18 and through the tubular shaft 19 to the arm 25 which operates the clutch 36 by means of the links 30 28, 29.

When the weft breaks the catch 13 which is connected to the weft fork of the loom falls into contact with one of the projections 35 7 preventing the further rotation of the

plate 6, and the further movement of the wheel 8 causes the catch 11 to be driven inward by the action of the curved slot 41 and out of contact with the slot in the ring 9 of the wheel 8.

When the catch 13 has been withdrawn and the loom restarted, the catch 11 lies inside the ring 9 so that connection is not at once reestablished. When, however, the wheel 8 has rotated until one of its slots 75 comes opposite the catch 11 this latter is forced outward by its spring which presses it against the edge of the cam slot 41 causing the plate 6 to turn and so permit the catch to move radially outward and again take up a 80 position in one of the slots in the ring 9, whereupon motion is again imparted to the crank 10.

By reducing the speed of the wheel 8 relative to the crank shaft of the loom to the 85 proportion of say 1:5 I am enabled when the weft has been broken to insert $2\frac{1}{2}$ picks in the cloth before the take up motion again comes into operation, by reason of the wheel 8 having to make half a revolution before 90 the catch 11 engages with one of the slots of the ring 9, also a less number of impulses are given to the succeeding parts of the motion thereby reducing the wear on the parts and also obtaining a more certain action of 95 the various parts of the mechanism.

If it be desired to quickly rotate the cloth beam in either direction, the pinions 39 are drawn outward against the action of the spring 40, thereby disconnecting the clutch 100 teeth of the pinions from the clutch teeth of the pulley 36.

I declare that what I claim is:—

1. In combination with a loom, a take up motion comprising a rotary member; means 105 for driving said member from the loom crank shaft at a reduced speed; a rocking crank adjustable in length operatively connected with said rotary member; a second crank of fixed length connected with said 110 first crank and rocking therewith; a second rotary member operatively connected to the take up roller; and means connected with said second crank for frictionally engaging and driving said rotary member. 115

2. In a take up motion for looms, the combination of an adjustable crank device comprising a pinion arranged on the axis on which the crank device rocks, a rack member with which said pinion gears, and a crank 120 pin carried by said rack member, with means for rocking said crank device and means for transforming the rocking motion of said crank device into rotary motion.

3. In a take up motion for looms, an ad- 125 justable crank device, means for rocking said crank device, means for transforming the rocking motion of said crank device into rotary motion, said crank device comprising a pinion arranged on the axis about which 130

the crank device rocks, a rack member with which said pinion gears, a crank pin carried by said rack member, and means for locking said crank pin in position.

4. A take up motion for looms, comprising in combination an adjustable rocking crank device; means for rocking said crank device; and means for transforming rocking motion of said crank device into rotary motion, said crank device comprising an arm; a pinion rotatably mounted co-axial with said arm; a rack meshing with said pinion and guided by said arm; a crank pin carried by said rack; and indicating means operatively connected with said pinion.

5. In a take up motion for looms, an adjustable crank device, means for rocking said crank device, means for transforming the rocking motion of said crank device into rotary motion, said crank device comprising a pinion arranged on the axis about which the crank device rocks, a rack member with which said pinion gears, a crank pin carried by said rack member, an indicating disk connected to said pinion, and a pointer working in conjunction with said disk.

6. In combination with a loom, a take up motion comprising an adjustable rocking crank device; a rotary member connected to the take up rolls; means for transforming rocking motion of said crank device into rotary motion of said member; said means being continuously in operative engagement; a rotary crank; connecting means between said crank and the adjustable crank device; a second rotary member adapted to be driven from the loom; a clutch between said second rotary member and said rotary crank; and means whereby the breaking of a weft in the loom will cause the disengagement of said clutch.

7. In combination with a loom, a take up motion comprising an adjustable rocking crank device; a rotary member connected to the take up rolls; means for transforming rocking motion of said crank device into rotary motion of said member; said means being continuously in operative engagement; a second rotary member adapted to be driven from the loom; projections carried on said second rotary member; a third rotary member adjacent to said second rotary member; a finger carried by said third rotary member and adapted to engage the projections on the second rotary member; means for moving said finger into and out of such engagement; and operative connections between said third rotary member and the adjustable crank device.

8. In combination with a loom, a take up motion comprising an adjustable rocking crank device; a rotary member connected to the take up rolls; means for transforming rocking motion of said crank device into rotary motion of said rotary member; rotary

driving means operatively connected to said crank device so as to rock the latter, said driving means comprising two rotary members and means for normally connecting said members; and means whereby the breaking of a weft in the loom takes said connecting means out of action.

9. In a take up motion for looms, an adjustable crank device, means for driving said crank device and means for transforming the rocking motion of said crank device into rotary motion, said driving means comprising a rotary member, means for driving said rotary member at a slower speed than the crank shaft of the loom, a projecting ring on said rotary member, said ring having parts cut out at intervals, a second member driven by said rotary member, a finger carried by said second member and adapted to normally lie in one of the breaks in the projecting ring, and means for moving the said finger out of engagement with said ring.

10. In combination with a loom, a take up motion comprising in combination an adjustable crank device; means for transforming rocking motion of said crank device into rotary motion of the take up rolls; a rotary member adapted to be driven at reduced speed by the crank shaft; projections on said rotary member; a second rotary member operatively connected to said adjustable crank device; a finger carried by said second rotary member and adapted to engage projections on said first rotary member; and a cam device for moving said finger out of engagement with said projections.

11. In a take up motion for looms, an adjustable crank device, means for driving said crank device and means for transforming the rocking motion of said crank device into rotary motion, said driving means comprising a rotary member, means for driving said rotary member at a slower speed than the crank shaft of the loom, a projecting ring on said rotary member, said ring having parts cut out at intervals, a second member driven by said rotary member, a finger carried by said second member and adapted to normally lie in one of the breaks in the projecting ring, a third rotary member, a cam device carried by said member and engaging said finger and means for arresting the movement of said third rotary member.

12. In a take up motion for looms, an adjustable crank device, means for driving said crank device and means for transforming the rocking motion of said crank device into rotary motion, said driving means comprising a rotary member, means for driving said rotary member at a slower speed than the crank shaft of the loom, a projecting ring on said rotary member, said ring having parts cut out at intervals, a second member driven by said rotary member, a finger carried by said second member and adapted

to normally lie in one of the breaks in the
projecting ring, a third rotary member, a
cam device carried by said member and en-
gaging said finger, means for arresting the
5 movement of said third rotary member, and
means for bringing said arresting means
into operation when the weft breaks.

In witness whereof, I have hereunto
signed my name this first day of May 1908,
in the presence of two subscribing witnesses.

WILLIAM HENRY CLEGG.

Witnesses:

RICHARD L. CLEAVER,
RICHARD W. WILLIAMS.