

No. 886,871.

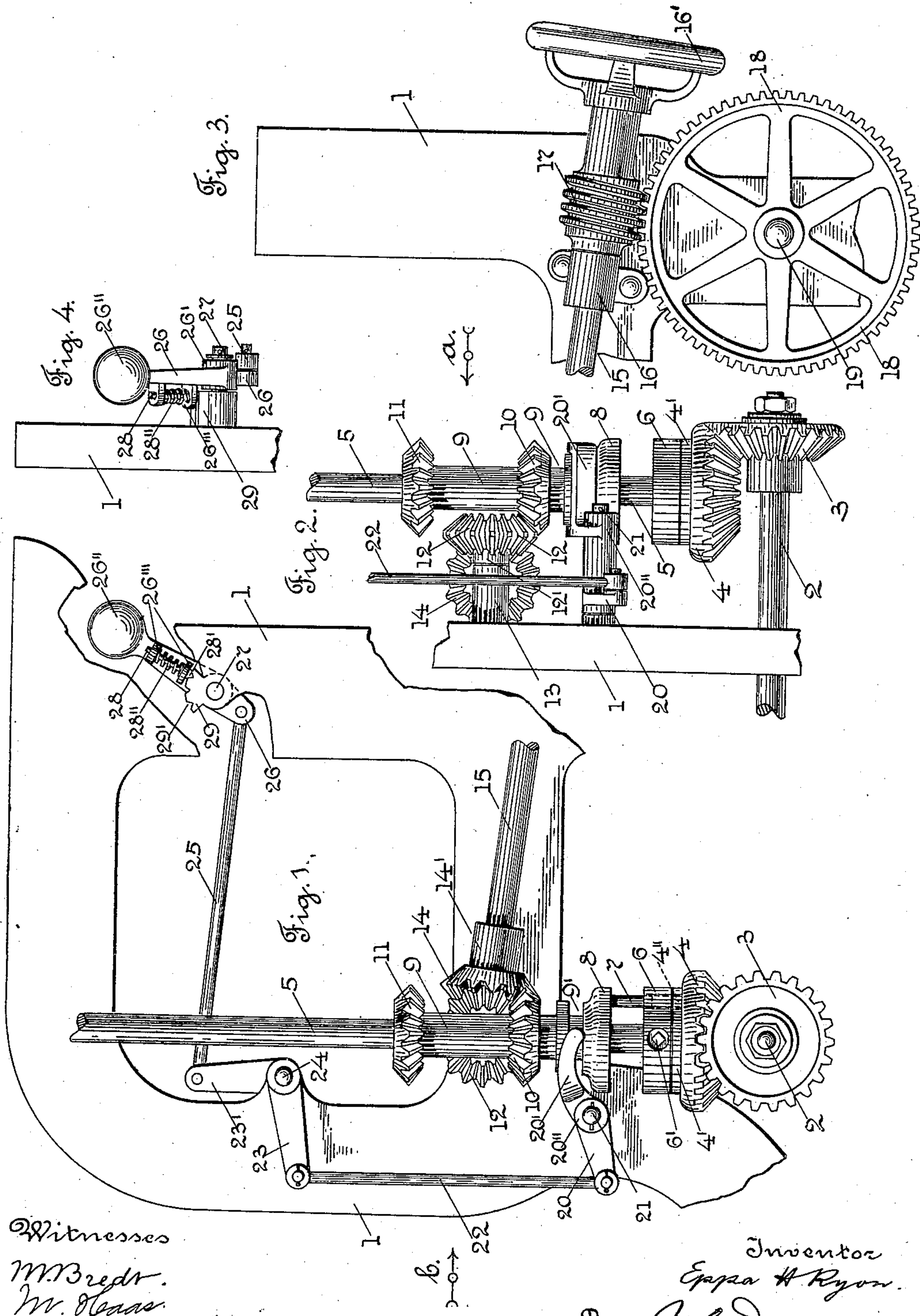
E. H. RYON.

PATENTED MAY 5, 1908.

REVERSING MECHANISM FOR THE TAKE-UP MECHANISM OF LOOMS.

APPLICATION FILED MAR. 28, 1906.

2 SHEETS—SHEET 1.



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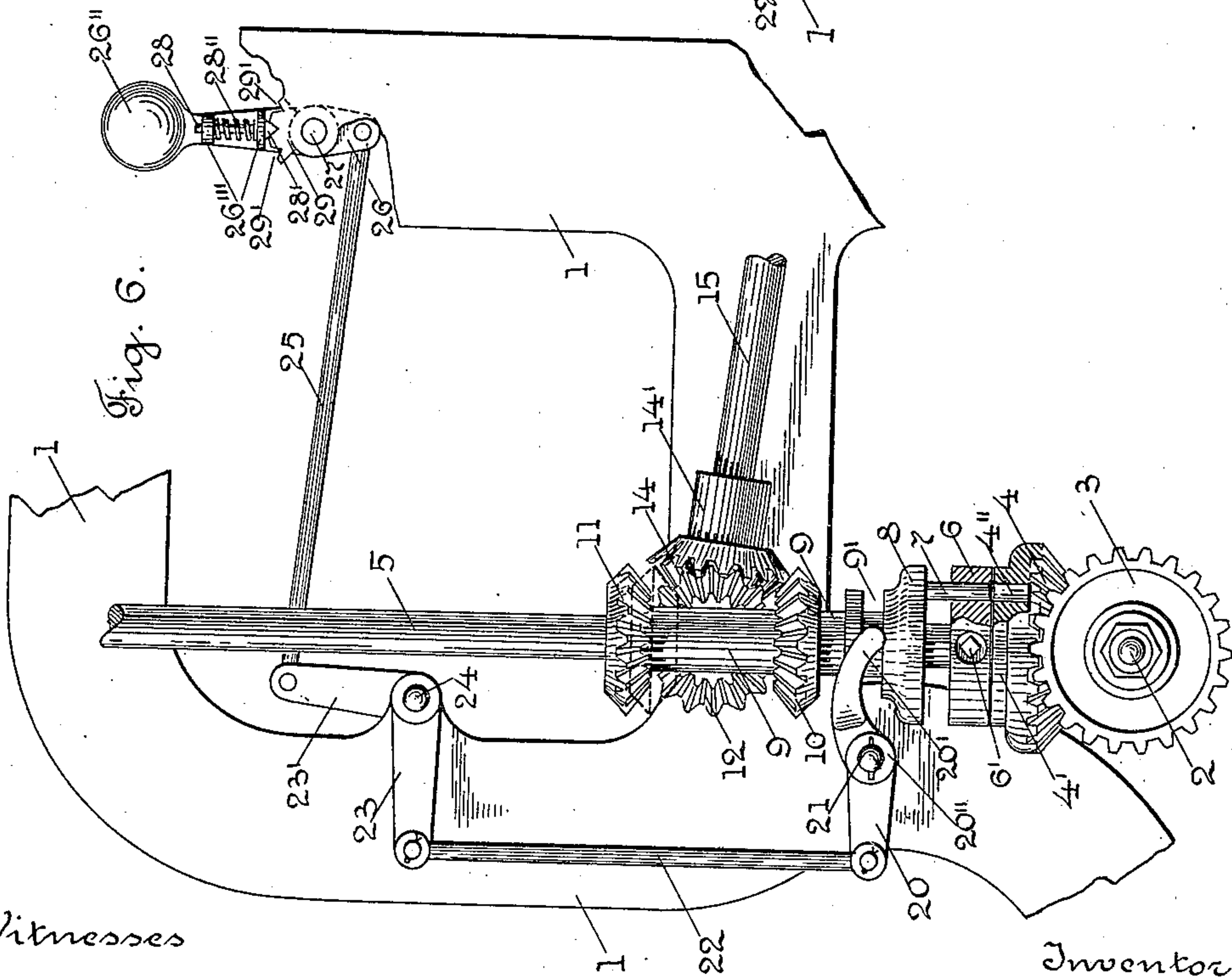
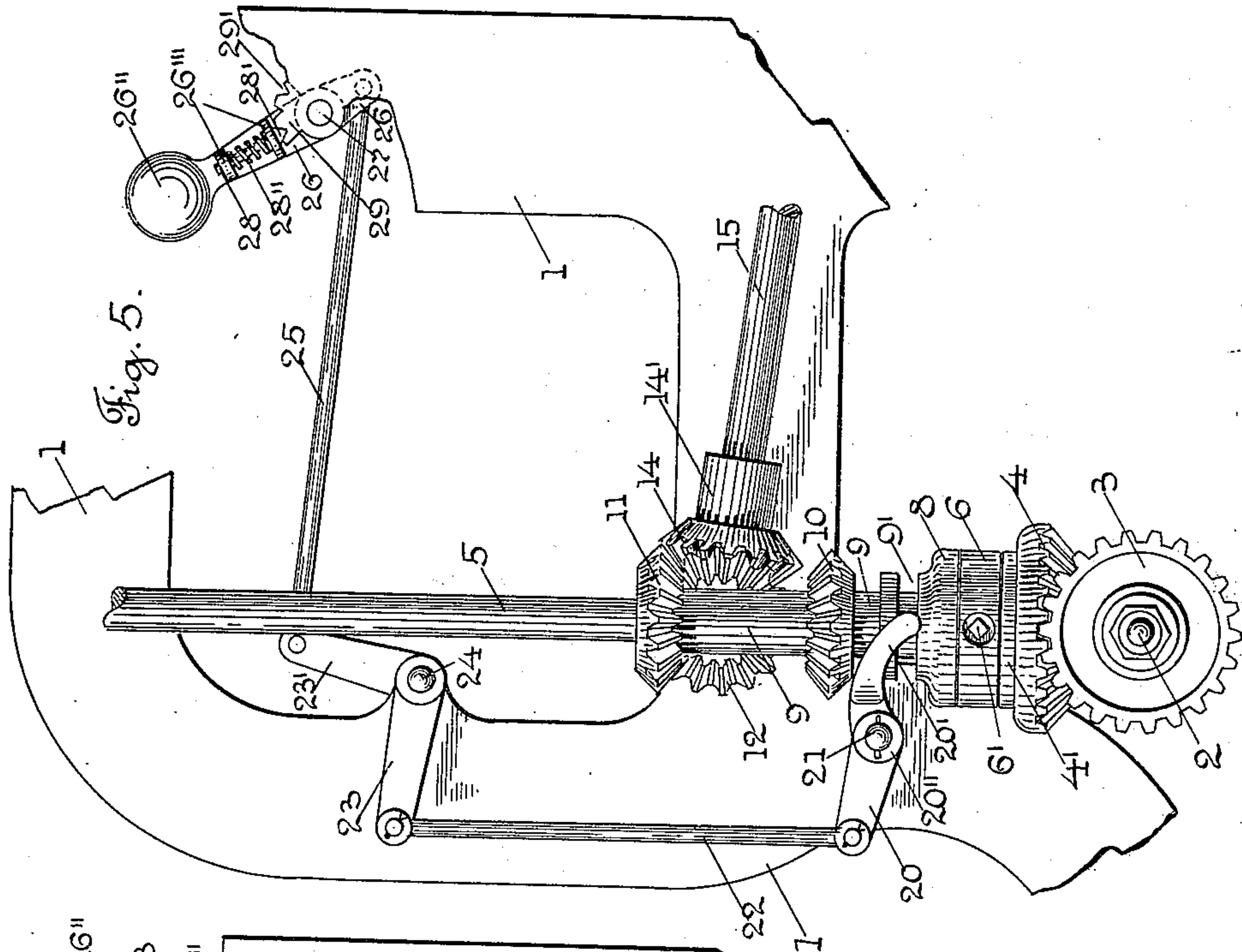
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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

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REVERSING MECHANISM FOR THE TAKE-UP MECHANISM OF LOOMS.

No. 886,871.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed March 28, 1906. Serial No. 308,402.

To all whom it may concern:

Be it known that I, EPPA H. RYON, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Reversing Mechanism for the Take-Up Mechanism of Looms, of which the following is a specification.

My invention relates to reversing motion for the take-up mechanism of a loom, which is operated when it is desired to reverse the pattern chain for picking out, etc., and more particularly relates to a reversing mechanism combined with the clutch on the upright driving shaft of the ordinary head motion of a loom, by means of which the clutch is operated through manually operated mechanism to release said upright shaft from its driving gears, and allow the driving shaft of the take-up mechanism to be rotated in a reverse direction, through the rotation of the upright shaft by the hand operated mechanism of the head motion, for reversing the pattern chain in the usual way. And also allow the driving shaft of the take-up mechanism to be rotated in either direction, independent of the upright shaft.

The object of my invention is to provide a reversing mechanism for the take-up mechanism of a loom, combined with the ordinary clutch mechanism of the upright driving shaft of the well known Knowles head motion for looms, shown and described in U. S. reissue Letters Patent, No. 7,784, and by means of which I can cause the driving shaft of the take-up mechanism to be rotated in the proper direction, through the rotation of the upright driving shaft of the head motion, and I can disconnect said upright shaft from its driving gears, to allow it to be rotated by the hand operated mechanism of the head motion, for reversing the pattern chain, and cause the driving shaft of the take-up mechanism to be rotated in a reverse direction, and I can cause the driving shaft of the take-up mechanism to be disconnected from said upright driving shaft, so that it may rotate in either direction, independently of said shaft.

In my improvements I preferably have the upper member of the clutch mechanism for the bevel driving gears of the upright shaft of the head motion, a part of, or attached to the lower end of the vertically moving sleeve,

splined on the upright driving shaft of the head motion, and carrying the two bevel gears, which, through a third gear, communicate rotary motion to a bevel gear on the driving shaft of the take-up mechanism, to cause said shaft and the take-up mechanism to have a forward or a reverse movement, in the usual and well known way, and as fully shown and described in my U. S. Letters Patent, No. 810,680.

I have only shown in the drawings a detached portion of a loom, and of the upright driving shaft of the head motion, and its operating gears, and the driving shaft of the take-up mechanism, and the clutch mechanism on the upright shaft, and the gearing intermediate said upright shaft and the take-up shaft, and my improvements combined therewith, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings: Figure 1 is a side view of the lower end of the upright driving shaft, and the inner end of the take-up driving shaft, and of the intermediate gearing, and of the clutch mechanism, and bevel driving gears, and of my improvements combined therewith, looking in the direction of arrow *a*, Fig. 2, and showing the upright driving shaft unclutched from its driving bevel gears. Fig. 2 is a rear view of the parts shown in the lower part of Fig. 1, looking in the direction of arrow *b*, same figure. Fig. 3 is a side view of the front end of the take-up driving shaft, showing the handle and worm thereon, and the gear fast on the shaft of the take-up roll. Fig. 4 is a front view of the operating handle of my mechanism. Fig. 5 corresponds to Fig. 1, but shows the parts shown in Fig. 1 in their opposite position, with the upright shaft clutched to its driving bevel gears. Fig. 6 corresponds to Fig. 5, but shows the sleeve and the gears thereon, intermediate the upright shaft and the take-up driving shaft, in another position, their intermediate position and the clutch mechanism partially broken away.

In the accompanying drawings, 1 is a portion of a loom side or end frame, 2 is a driven shaft having a bevel gear 3 fast thereon, which meshes with and drives a bevel gear 4 loose on the lower end of the upright driving shaft 5 of the head motion, not shown, of the loom.

A collar 6, fast on the shaft 5 by a set screw 6', has a hole therethrough for a pin 7, which extends down from a disk 8, forming one member of the clutch, and which is a part of or fast on the lower end of a sleeve 9, which is preferably splined on the upright shaft 5, to rotate therewith and to have a vertical movement thereon.

The pin 7 is adapted to extend through the guide collar 6, fast on the shaft 5, and to enter a hole 4'' in the hub 4' of the bevel gear 4, forming the second member of the clutch, to attach or clutch the disk 8, the sleeve 9, and the shaft 5, to said gear 4, and cause them to rotate therewith. The pin 7 may be moved out of engagement with the hole in the hub 4' of the gear 4, to disconnect the disk 8 and sleeve 9 from said gear, as shown in Fig. 1, and allow said disk 8 and sleeve 9 and the upright shaft 5, to be rotated independently of the gears 3 and 4. The lower part of the sleeve 9, above the disk 8, has a bevel gear 10 fast thereon, and the upper end of the sleeve 9 has a second bevel gear 11 fast thereon, in the usual way. The bevel gears 10 and 11 are of the same size. Intermediate the bevel gears 10 and 11, and adapted to mesh with either gear 10 or 11, or in this instance to be out of mesh with both gears 10 and 11, is a double bevel gear 12, having its hub 12' loosely mounted on the reduced end of a stud 13, secured to the loom frame 1. The inner face of the bevel gear 12 is in mesh with and rotates a bevel gear 14, which has its hub 14' fast on the inner end of the driving shaft 15 of the take-up mechanism. The other or outer end of the shaft 15 is supported in a bearing 16 on the loom frame 1, and has an operating handle 16' fast thereon, and also a worm 17 meshing with and rotating a gear 18, fast on the shaft 19 of the take-up roll, not shown.

The lower end of the sleeve 9 has an annular groove 9' therein, to receive the forked end 20' of a lever 20, which has a hub 20'' loosely mounted on a stud 21 secured to the loom frame 1. The lever 20 is connected through a link 22, with a lever 23 fast on a rock shaft 24, mounted in suitable bearings on the loom frame. A lever 23', also fast on the rock shaft 24, is connected by a link 25 in this instance with a hand operating lever 26, having a hub 26' pivotally mounted on a stud 27 on the loom frame. The lever 26 has in this instance an enlarged end or knob 26'' thereon, and two side extensions or ears 26''', for a pin 28. A spiral expansion spring 28'' encircles the pin 28, and acts to hold the bevel or wedge shaped end 28' of said pin 28 in yielding engagement with any one of the three notches 29' in the stationary boss 29, see Fig. 4, and forming a locking device for said lever 26.

The operation of my improvements will be readily understood by those skilled in the

art. When the loom is running normally the several parts will be in the position shown in Fig. 5. When it is desired to reverse the pattern chain, not shown, for picking out, etc., the lever 26 is moved outwardly into the position shown in Fig. 1, and locked in said position, and through link 25, lever 23', rock shaft 24, lever 23, link 22, and lever 20, the sleeve 9 is moved upwardly on the shaft 5, carrying the disk 8, and causing the pin 7 to be moved out of engagement with the hub 4' of the bevel gear 4, to unclutch the disk 8, sleeve 9, and the shaft 5, from said bevel gear 4; and at the same time the bevel gear 10 is moved into engagement with the double bevel gear 12, and the bevel gear 11 moved out of engagement with said gear 12.

The rotation of the upright shaft 5, through the hand operated mechanism of the head motion for reversing the pattern chain, in the ordinary way, will, through bevel gear, 10, bevel gear 12, and bevel gear 14, rotate the shaft 15 in a reverse direction, and through worm 17, gear 18, and shaft 19, reverse the take-up roll, not shown.

When it is desired to turn the shaft 15, to rotate the gear 18 and the shaft 19, and turn the take-up roll in either direction, independent of the upright shaft 5, the lever 26 is moved to its intermediate position, shown in Fig. 6, and locked there, this movement of the lever 26, through the intermediate connections to the sleeve 9, will move said sleeve to its intermediate position, and leave the bevel gear 12 out of engagement with either of the bevel gears 10 and 11, so that the shaft 15 is free to be rotated in either direction, independently of the gears 10 and 11.

If it is not desired to have an intermediate position for the sleeve 9, and gears 10 and 11, so that both gears will be out of mesh with the gear 12, then the sleeve 9 will be shortened, or the relative position of the gears 10 and 11 changed, so that one or the other of said gears will always be in mesh with the gear 12.

Instead of the sleeve 9 splined on the shaft 5, any other form of support may be used for the bevel gears 10 and 11, to cause them to move on and rotate with the shaft 5. In case the shaft 15 extends in a horizontal plane, to bring the axis of the bevel gear 14 thereon, in a plane at right angles to the axis of the bevel gears 10 and 11, then the intermediate gear 12 can be dispensed with, and the gears 10 and 11 will mesh directly with the gear 14.

It will be understood that the details of construction of my improvements may be varied if desired.

Instead of a pivoted hand lever 26, a sliding lever, or a wheel may be used, and the intermediate connections from the lever 26 to the sleeve 9 may be changed.

Having thus described my invention, what

I claim as new and desire to secure by Letters Patent is:—

1. In a loom take-up reversing mechanism, the combination with the upright driving shaft of the head motion, and clutch mechanism on said shaft, and the bevel driving gears of said shaft of a sleeve movable on and rotatable with said upright shaft, and having thereon or attached thereto, one member of the clutch mechanism for clutching said upright shaft to said driving bevel gears, and also having thereon or attached thereto, two bevel gears to mesh with and drive a bevel gear connected with the take-up mechanism shaft, and said bevel gear and shaft, and means for moving said sleeve, to clutch or unclutch said upright driving shaft.

2. In a loom take-up reversing mechanism, the combination with the upright driving shaft of the head motion, and clutch mechanism on said shaft and the bevel driving gears of said shaft, of a sleeve movable on and rotatable with said upright shaft, and having thereon or attached thereto one member of the clutch mechanism for clutching said upright shaft to said driving bevel gears, and also having thereon or attached thereto two bevel gears to mesh with and drive a gear intermediate said two bevel gears and the gear on the take-up mechanism shaft, and said intermediate gear, and said shaft and gear, and manually operated means for moving said sleeve, to clutch or unclutch said upright driving shaft.

3. In a loom take-up reversing mechanism,

the combination with the upright driving shaft of the head motion, and clutch mechanism on said shaft and the bevel driving gears of said shaft, of a sleeve movable on and rotatable with said upright shaft, and having thereon one member of the clutch mechanism for clutching said upright shaft to said driving bevel gears, and also having thereon two bevel gears to mesh with and drive a bevel gear connected with the take-up mechanism shaft, and said bevel gear and shaft, and means for moving said sleeve, to clutch or unclutch said upright driving shaft, and locking mechanism for said means.

4. In a loom take-up reversing mechanism, the combination with the upright driving shaft of the head motion, and clutch mechanism on said shaft and the bevel driving gears of said shaft, of a sleeve movable on and rotatable with said upright shaft, and having thereon one member of the clutch mechanism for clutching said upright shaft to said driving bevel gears, and also having thereon two bevel gears, to mesh with and drive a bevel gear connected with the take-up mechanism shaft, and said bevel gear and shaft, and means for moving said sleeve to two extreme positions, to clutch or unclutch said upright driving shaft, and also to a position intermediate its two extreme positions, and locking mechanism for said means.

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