

(No Model.)

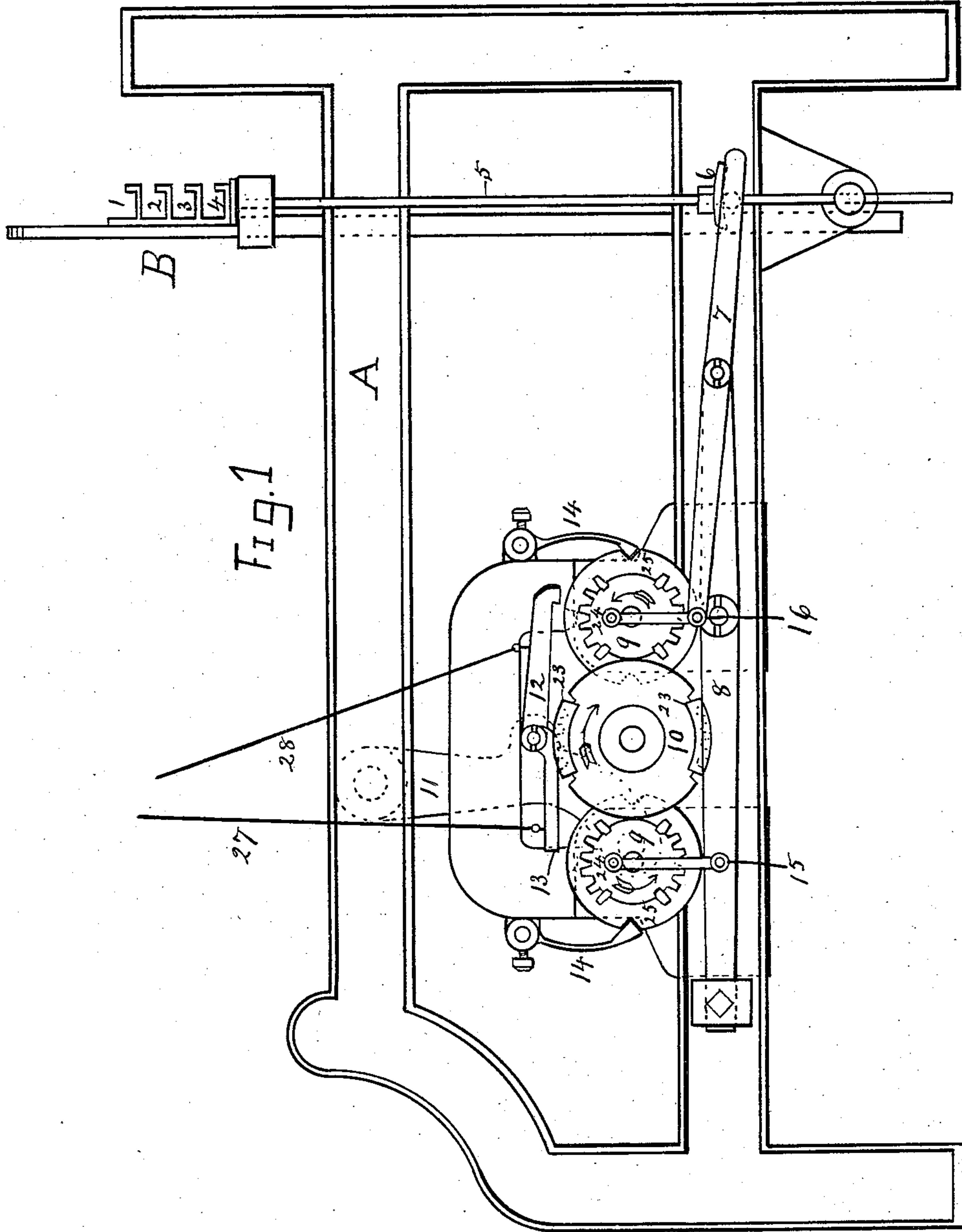
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R. B. GOODYEAR.

SHUTTLE BOX OPERATING MECHANISM FOR LOOMS.

No. 564,374.

Patented July 21, 1896.



WITNESSES:

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(No Model.)

3 Sheets—Sheet 2.

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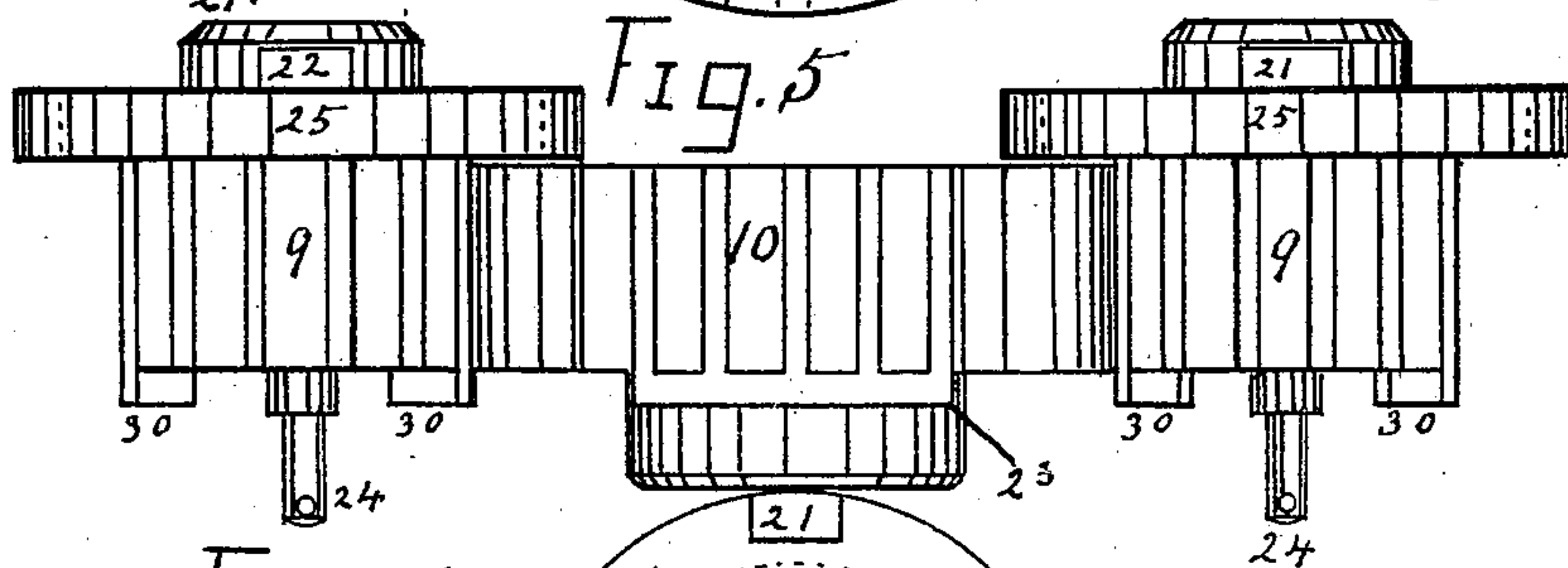
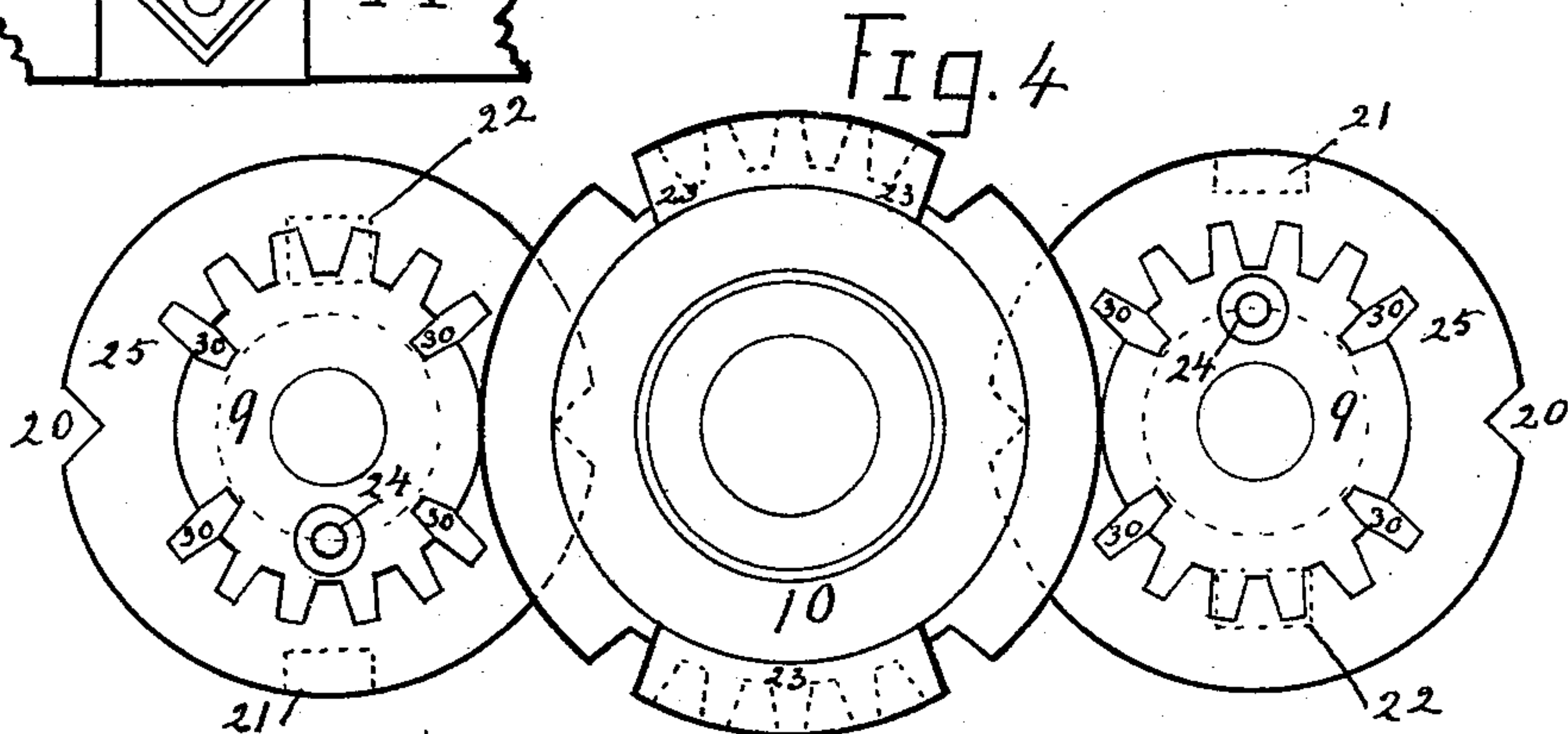
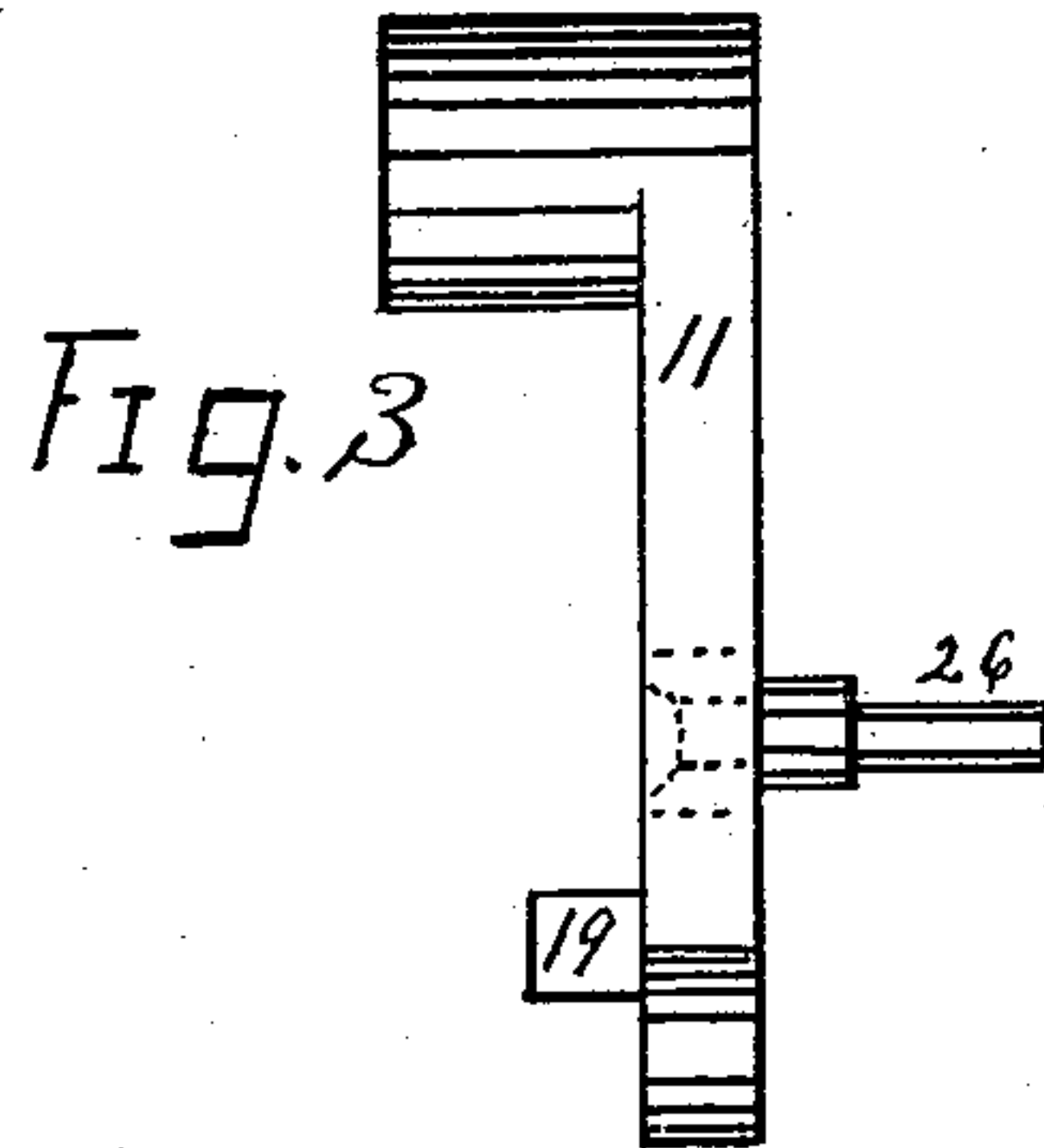
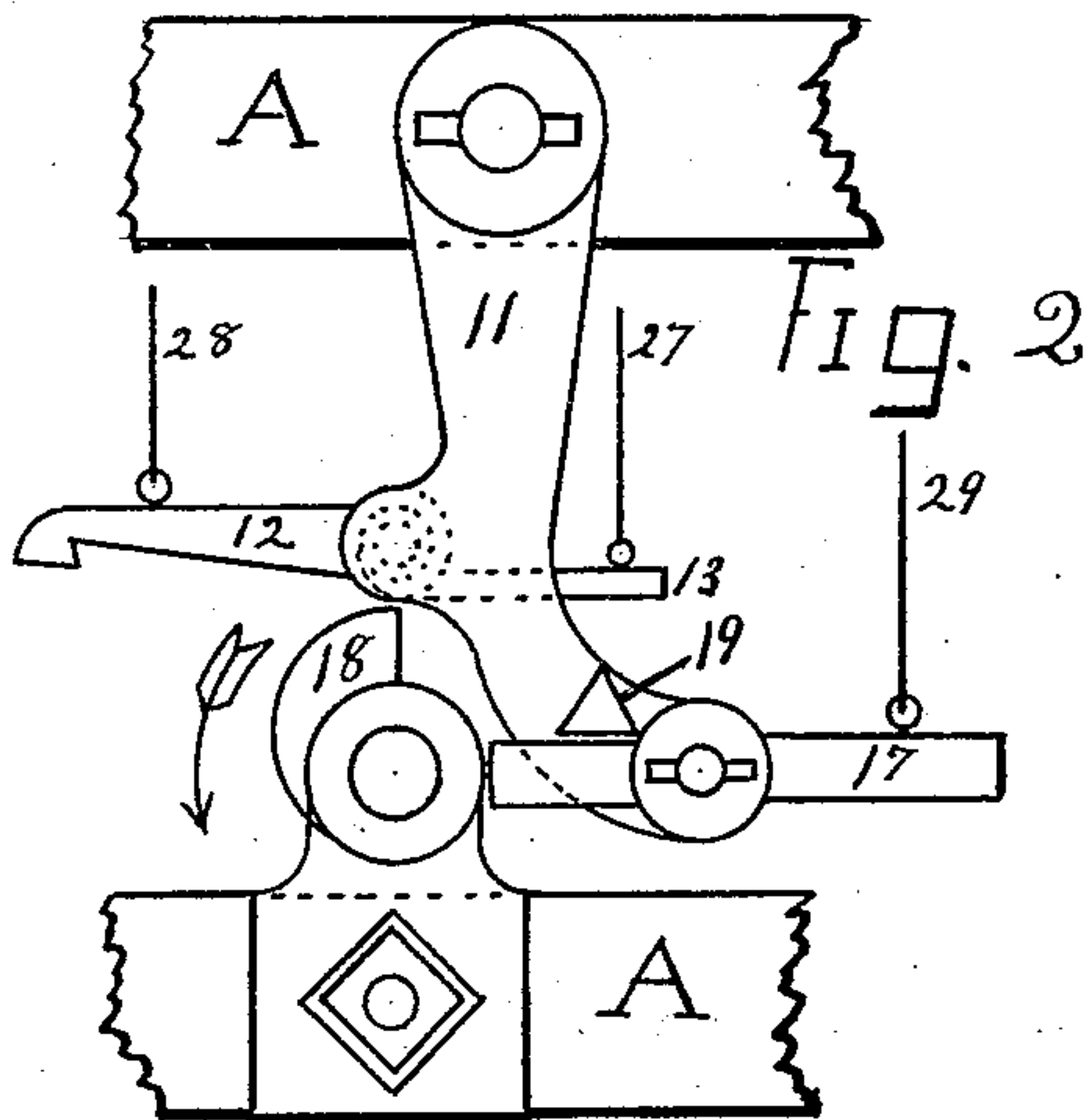
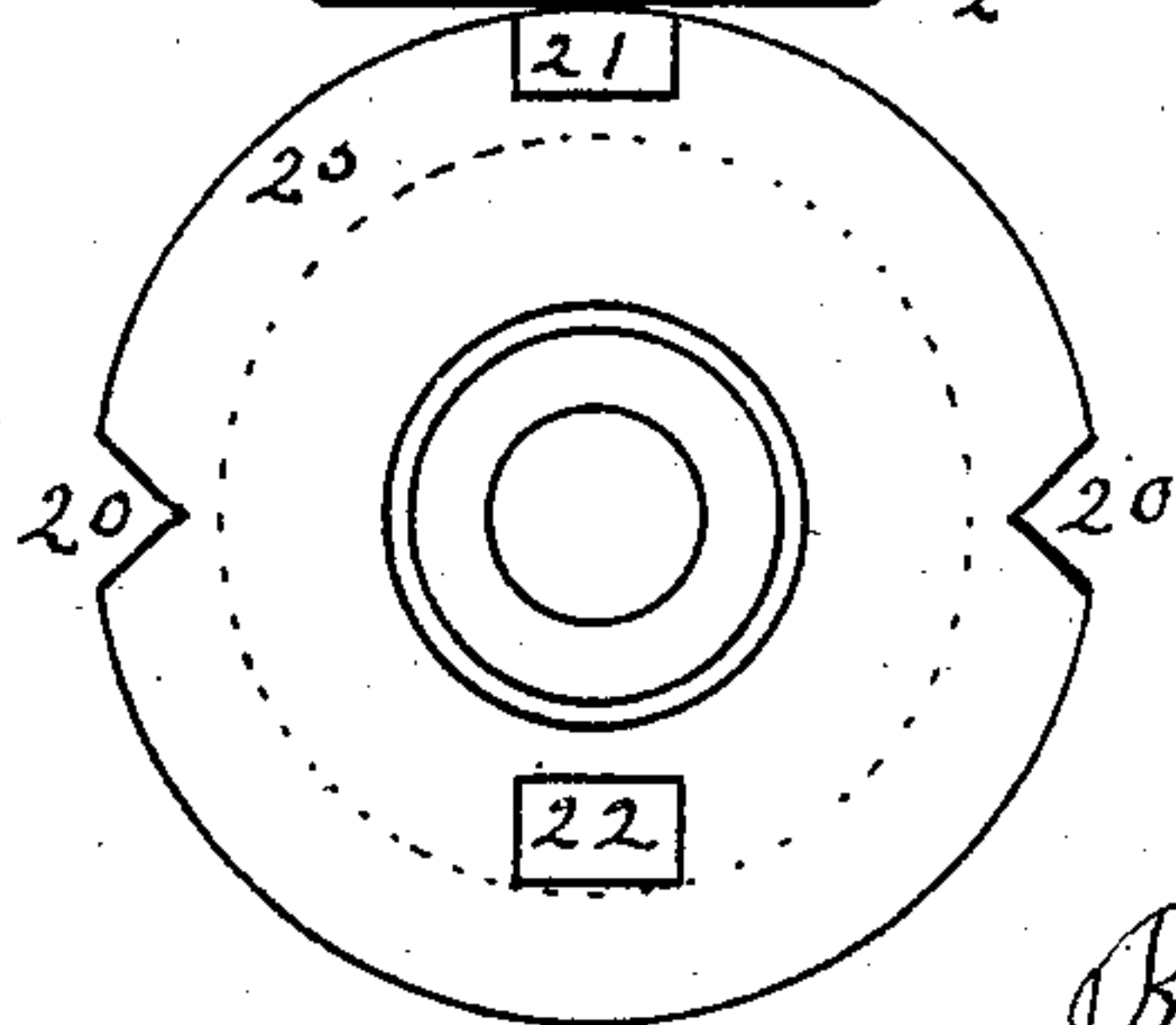


Fig. 6



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Fig. 7

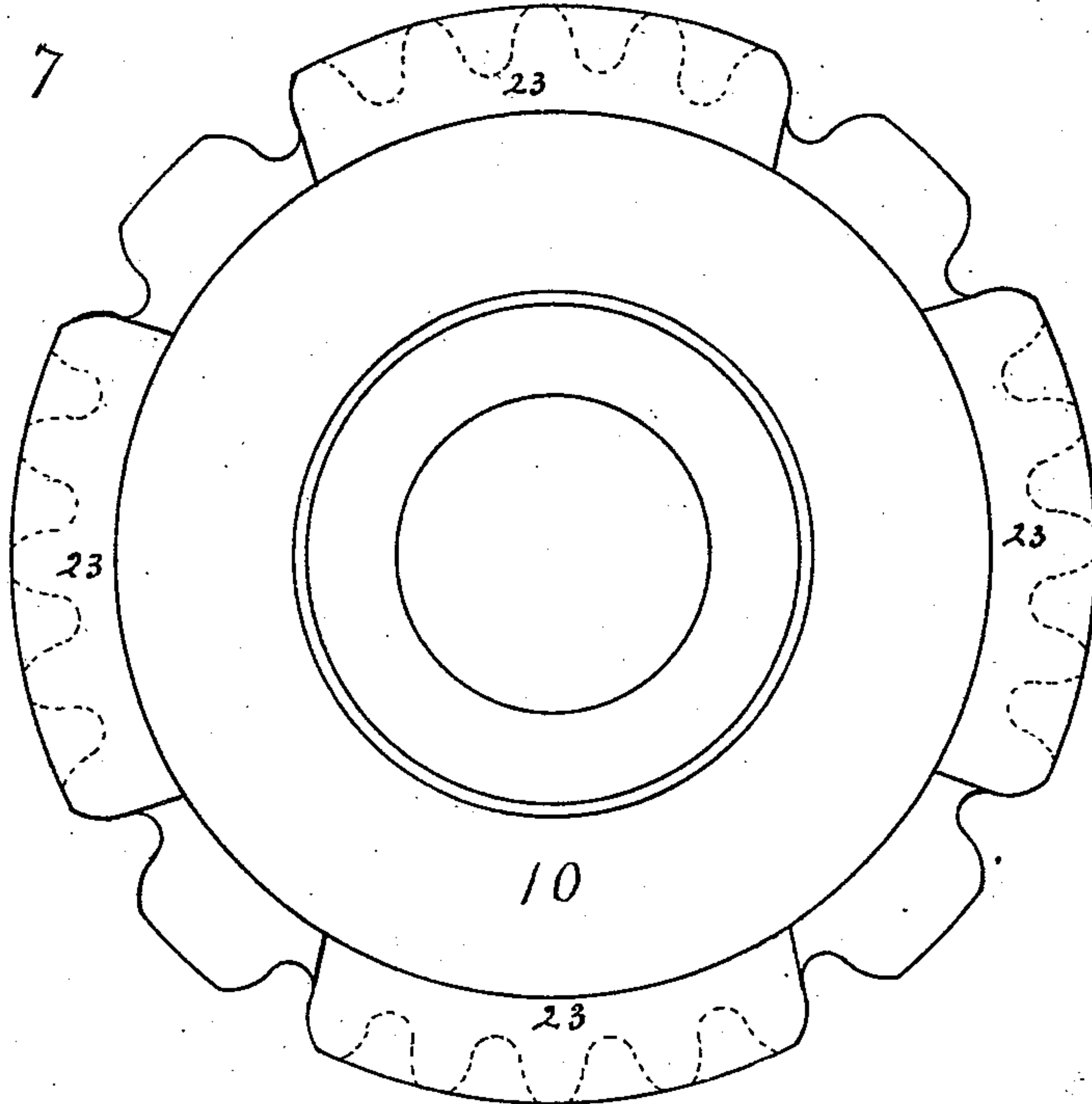
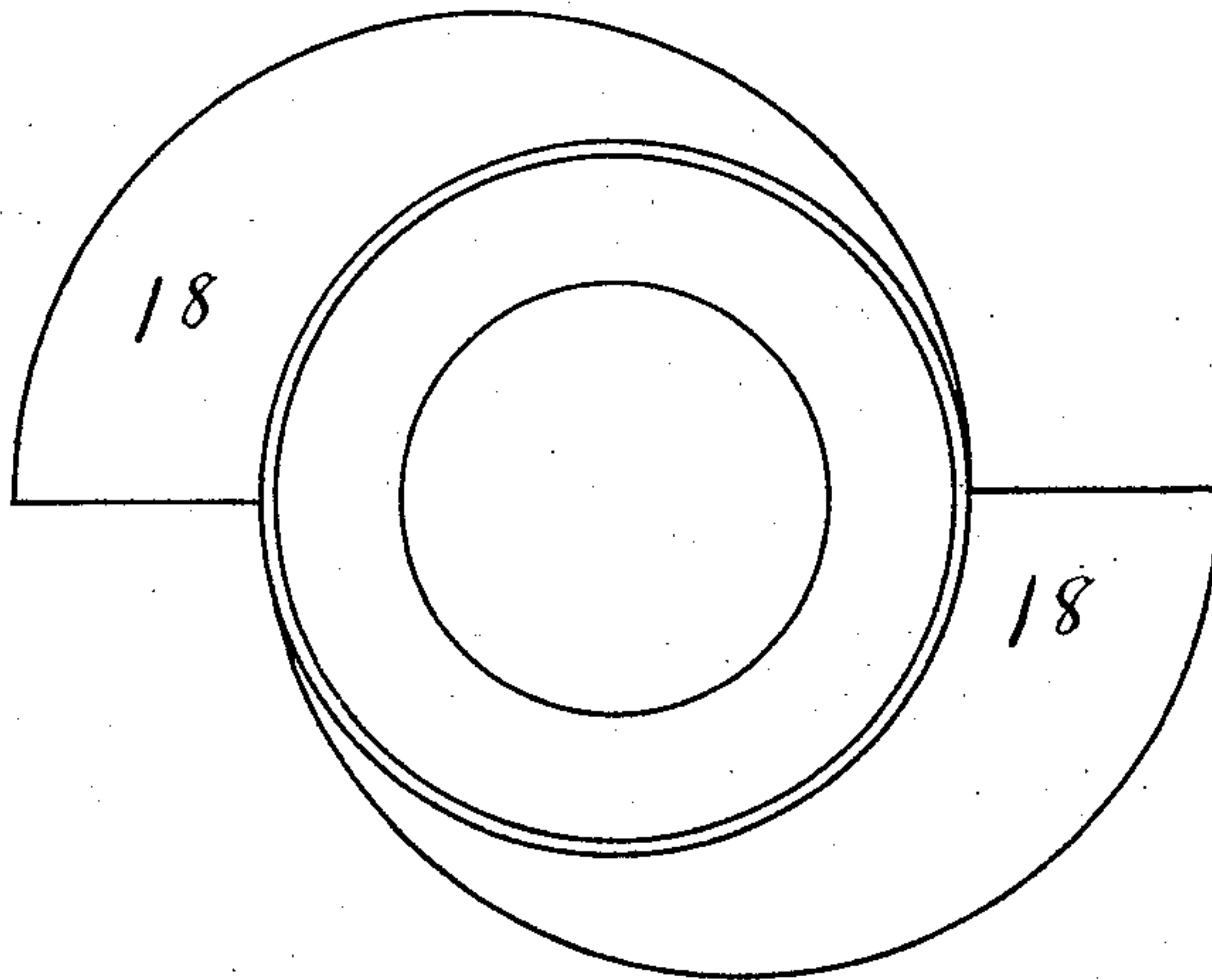


Fig. 8



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UNITED STATES PATENT OFFICE.

ROBERT B. GOODYEAR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO HUGHES & RUSSUM, OF SAME PLACE.

SHUTTLE-BOX-OPERATING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 564,374, dated July 21, 1896.

Application filed March 16, 1896. Serial No. 583,407. (No model.)

To all whom it may concern:

Be it known that I, ROBERT B. GOODYEAR, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Shuttle-Box-Operating Mechanism for Looms, of which the following is a specification, reference being had to the accompanying drawings, making a part of the same.

My invention relates to improvements in rise-and-fall shuttle-box motions for power-loom, and is designed to shift and call any one of a series of four boxes at will.

The improvement consists in the combination and arrangement of three cog-wheels, all having interrupted teeth, two of them being driven wheels, and are connected to a double-pivoted lever. The driven wheels are put into gear and motion by moving fingers controlled by a pattern mechanism, as illustrated in the accompanying drawings, in which—

Figure 1 is a view of a loom side having my improvement connected. Fig. 2 is a section of the loom side, showing the mechanism for operating the moving fingers. Fig. 3 is an edge view of the lever, to which are connected the moving fingers. Fig. 4 is a face view of the cog-wheels. Fig. 5 is an edge view of Fig. 4. Fig. 6 is a back view of one of the driven cog-wheels. Fig. 7 is a face view of the driver cog-wheel, showing the cogs in four series or divisions. Fig. 8 is a face view of the wiper-cam for moving the fingers when operating "pick and pick."

Similar letters and numerals of reference indicate corresponding parts in the several figures.

A represents the loom side; B, the lay. At the end of the lay B are arranged, in the usual manner, the shuttle-boxes 1, 2, 3, and 4. The shuttle-boxes are connected to the operating mechanism by the usual rod 5, carrying a shoe 6, which shoe rests on a roller fixed in the end of lever 7. The levers 7 and 8 are double-pivoted. One pivot is on a stud fixed on the side of the loom-frame. The other pivot is on a stud in the short end of lever 8, as shown in Fig. 1.

The construction of that part of the mech-

anism which I claim as belonging to my improvement is as follows:

10 is a cog-wheel, in which are made ten teeth or cogs, five teeth being directly opposite the other five, as is shown by the dotted lines. This wheel is a driver, and is fixed on the "cam-shaft" of the loom. The outer ends of these teeth are flanged, 23, the first and last space between the first and last tooth of each series being open.

9 9 are driven wheels, each having twelve cogs or teeth, six in each series, each series being directly opposite the other. The first and last tooth of each series has a lug 30. (See Figs. 4 and 5.) These lugs 30 enter the open spaces at the beginning and end of each series of teeth on the wheel 10.

The wheels 9 9 are mounted on studs fixed to the loom side A. Each wheel 9 carries a stud, and by pitmen 15 and 16 the wheels are connected to levers 7 and 8. (See Fig. 1.) To each of the wheels 9 is fixed or cast a flange 25. In these flanges are made notches 20, and on the back are cast lugs 21 and 22. It will be noticed that lug 21 is farther from the center than lug 22.

14 14 are spring-brakes, each having at its lower end a V-shaped lug. These lugs engage in the V-notches 20 20 in the flanges 25 25.

11 is a lever hung on a stud fixed to the loom side. This lever 11 carries on a stud 26 (see Fig. 3) fingers 12 and 13. These fingers 12 and 13 are by cords or wires 27 and 28 connected to the usual pattern-chain for controlling the movements of the shuttle-boxes. On the lower end of lever 11 is pivoted a trigger 17. To the lever 11 is fixed a stop-lug 19. To the trigger 17 is attached a cord or wire 29, by which the trigger is connected in a well-known manner to the weft stop-motion.

18 is a wiper-cam fixed on the cam-shaft.

The operation of my improved shuttle-box motion is as follows: Motion is given by the cam-shaft that carries the wheel 10 and cam 18. The movement is in direction indicated by the arrows, one revolution for each two picks of weft. The wiper-cam 18 and lever 11 give a to-and-fro movement to the fingers 12 and 13, which fingers, being controlled by the pattern-chain, raise or drop them so as to

cause them to strike in their movement the
lugs 21 or 22 on wheels 9 9. The movements
of the fingers and driver-wheel 10 are so timed
that the push of the fingers will move the
5 wheels 9 9, so that the first tooth of a series
on wheel 9 will enter the open space of the
flange 23, beginning with the series of teeth on
wheel 10. This flange 23 prevents the wheels
gearing except in the first space of each se-
ries. In the position of the shuttle-box as
10 shown in Fig. 1 the top box 1 is in use. If
finger 12 now moves the wheel 9 on the right
hand, it will be revolved one-half of one
revolution. The stud and pitman 24 will be
15 moved to the bottom of wheel 9. The pitman
16, being connected to lever 7, will raise the
box one shelf and shuttle 2 will be used.
After two picks the finger 13 may be caused
to strike a lug on wheel 9 to the left hand.
20 This will cause that wheel to make one-half
of one revolution, and its pitman 15, being
connected to lever 8, will raise the box to shelf
4 and shuttle 4 will be used. If after two
picks fingers 12 and 13 both act at the same
25 time, both wheels 9 9 will be moved, giving
a full drop, and put the boxes in position, as
shown in Fig. 1. Box 3 may be called, if box
1 is in position, by solely operating finger
13, wheel 9 on the left, and lever 8. This will
30 skip box 2 and bring box 3 into position. If
box 2 is in position and box 3 is wanted, both
pinions 9 9 are moved, lever 8 raises two and
lever 7 drops one, and the box is only raised
one shelf. Thus it is required to discount one
35 shelf in order to reach the one desired. The
wheel 9 on the right moves one box. The wheel
9 on the left moves two boxes. Both wheels

moving at same time move three boxes, and
it is plain and clear to one familiar to oper-
ating shuttle-boxes in looms that with my 40
improvements I can command any one of a
series of four boxes at will, and by the modi-
fications in wiper-cam 18 (shown in Fig. 8)
I can operate pick and pick, using a four-
shuttle box at each end of the loom-lay, call- 45
ing any one of the series of four at will.

When the loom is turned backward, the
trigger 17 tilts up, and the wiper-cam 18 does
not operate the lever 11, fingers 12 and 13,
and so long as the loom is turned backward 50
the shuttle-box will not be moved.

Fig. 7 shows a driving-wheel divided into
four divisions. Two divisions are only in use
at same time. If a tooth gets broken out of
one division, the wheel may be shifted on the 55
cam-shaft, bring the other opposite two di-
visions into use, and save the cost of a new
wheel.

Having as above fully described my inven-
tion, what I claim as new, and desire to secure 60
by Letters Patent, is—

In a rise-and-fall shuttle-box mechanism
for looms, the combination consisting of three
cog-wheels having interrupted teeth, one a
driver and two driven wheels; a wiper-cam; 65
two fingers actuated by said cam, and con-
trolled by a pattern mechanism; a divided
and double-pivoted lever connected to and
operated by the driven wheels; all substan-
tially as shown and described.

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Witnesses:

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