

900,403.

W. J. LUTTON.
 PROTECTOR MECHANISM FOR LOOMS.
 APPLICATION FILED JULY 31, 1906.

Patented Oct. 6, 1908.
 3 SHEETS—SHEET 1.

Fig. 1.

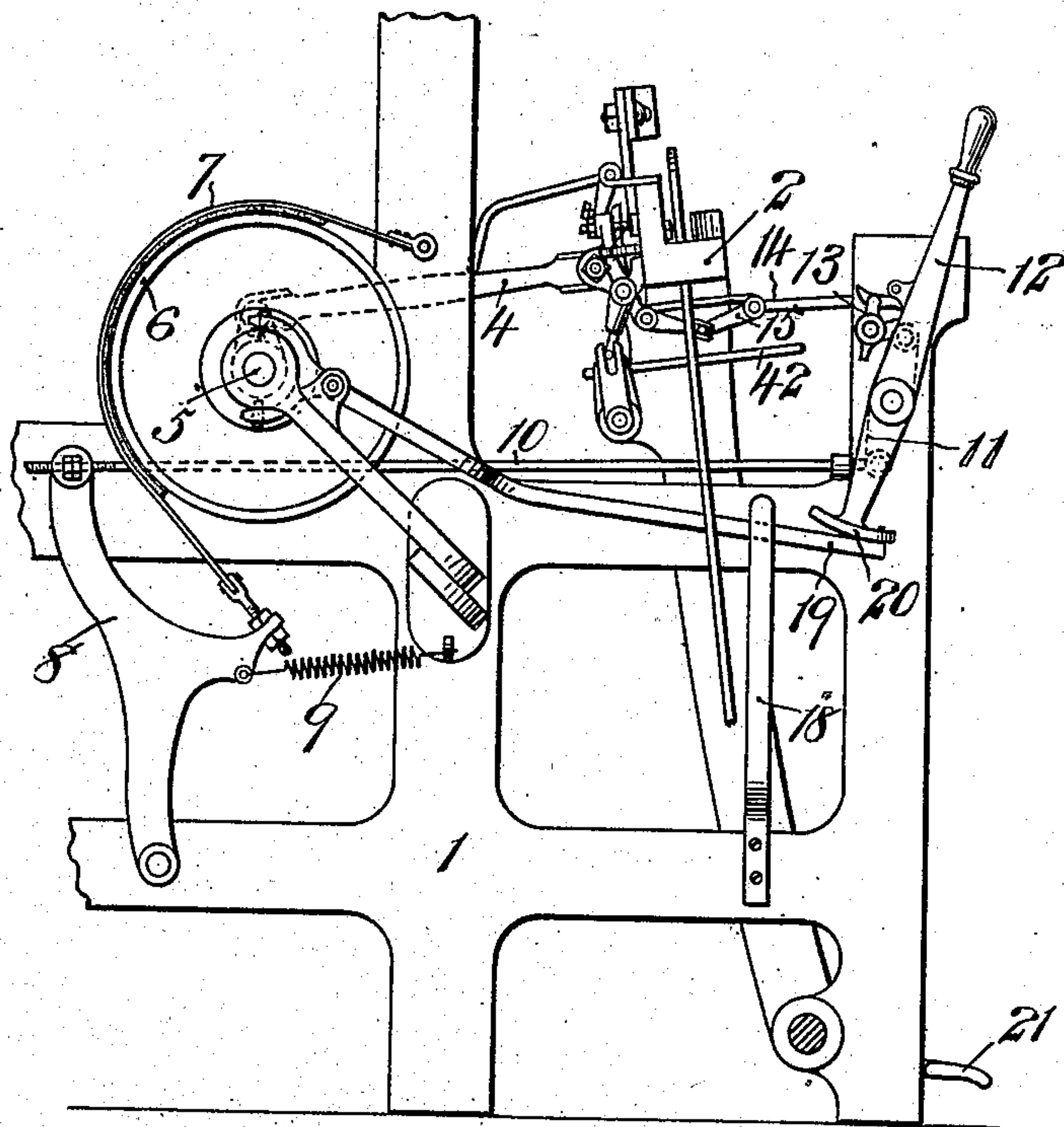
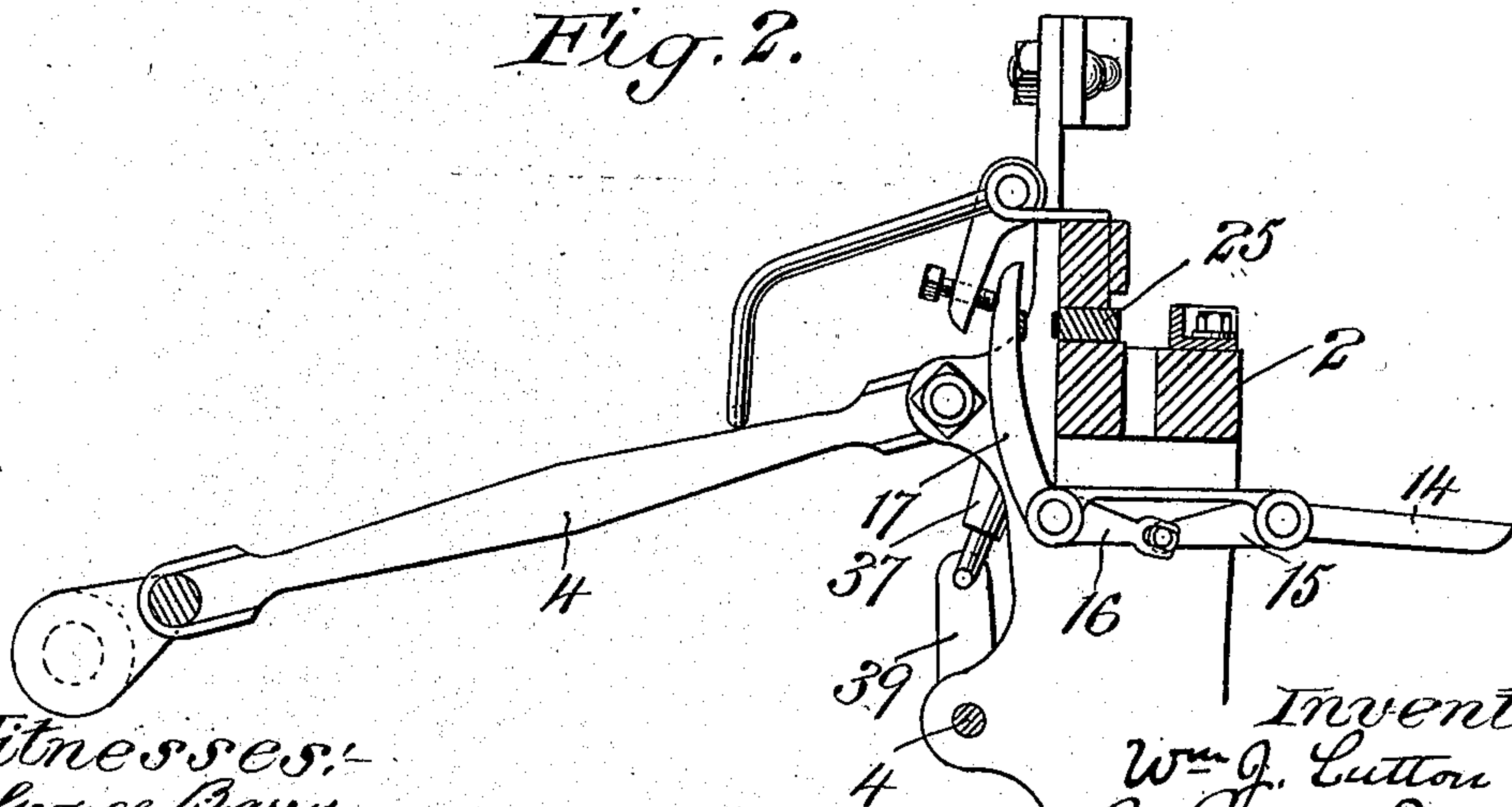


Fig. 2.



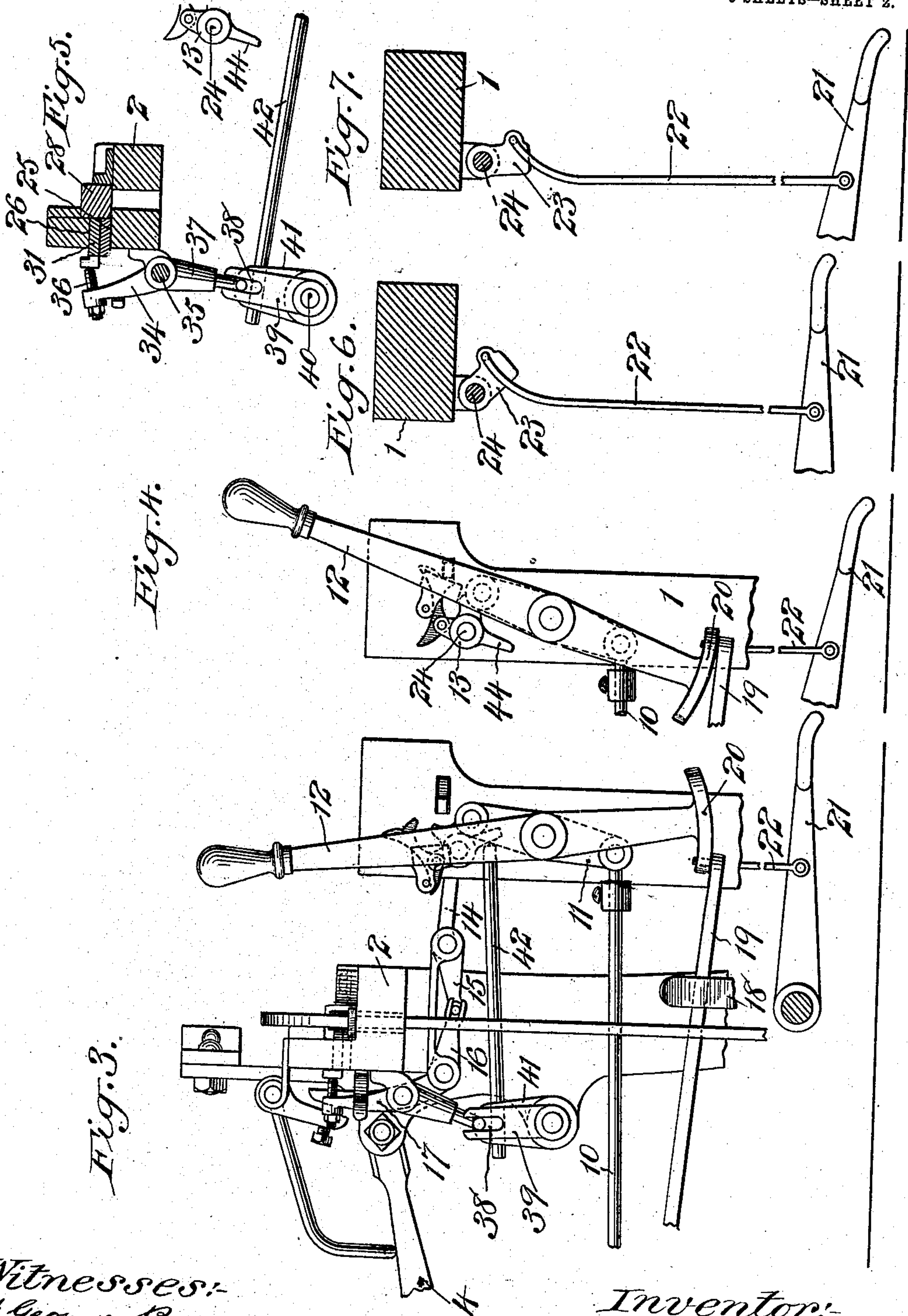
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his Attorneys

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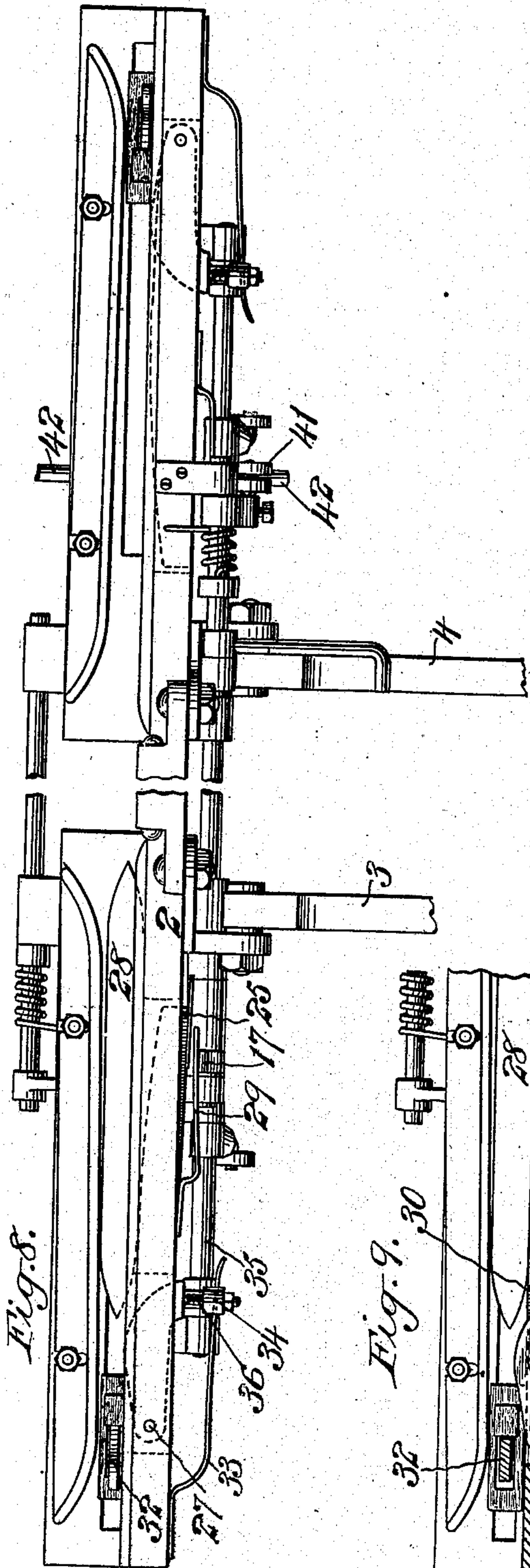


Fig. 8.

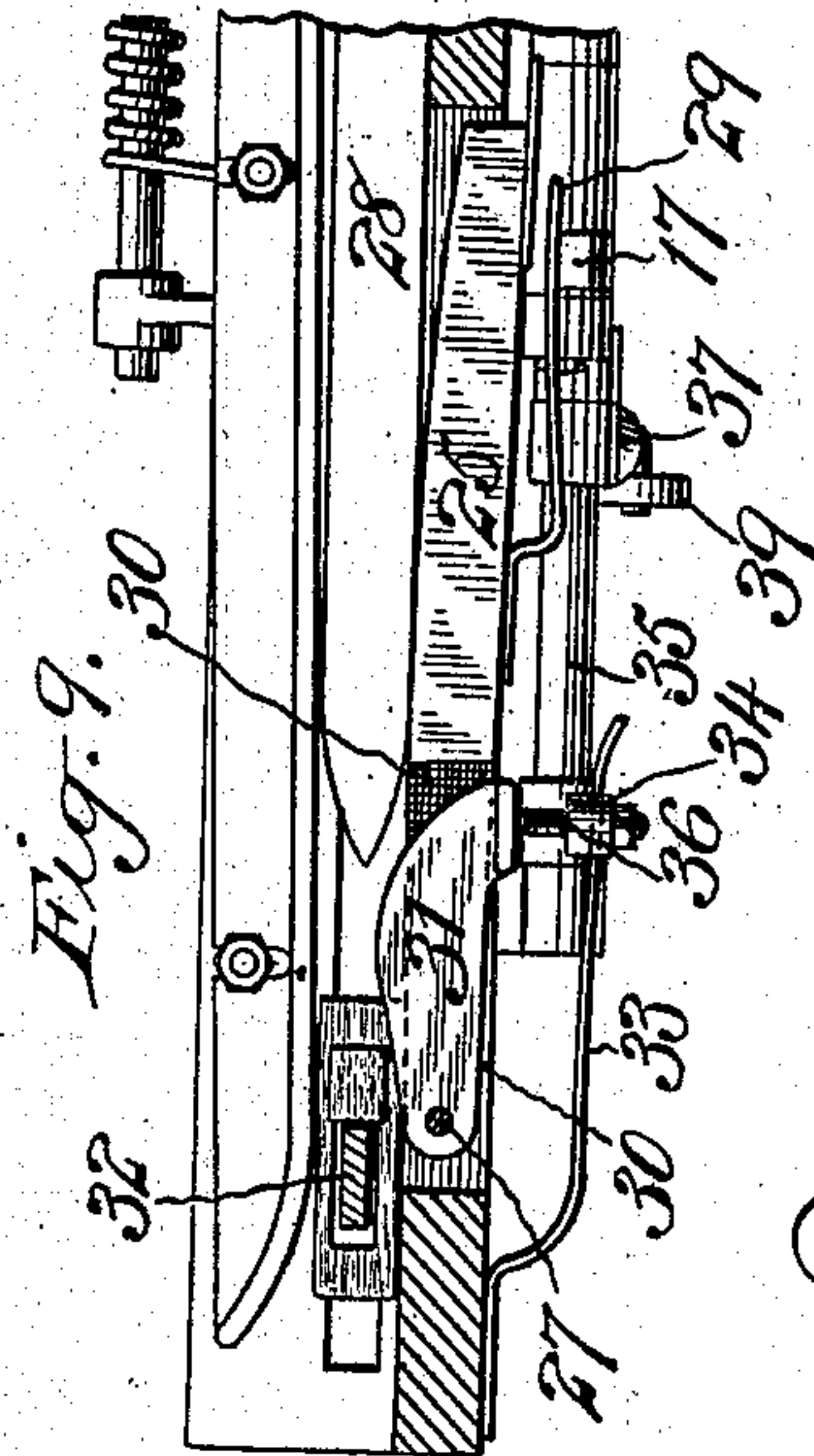


Fig. 9.

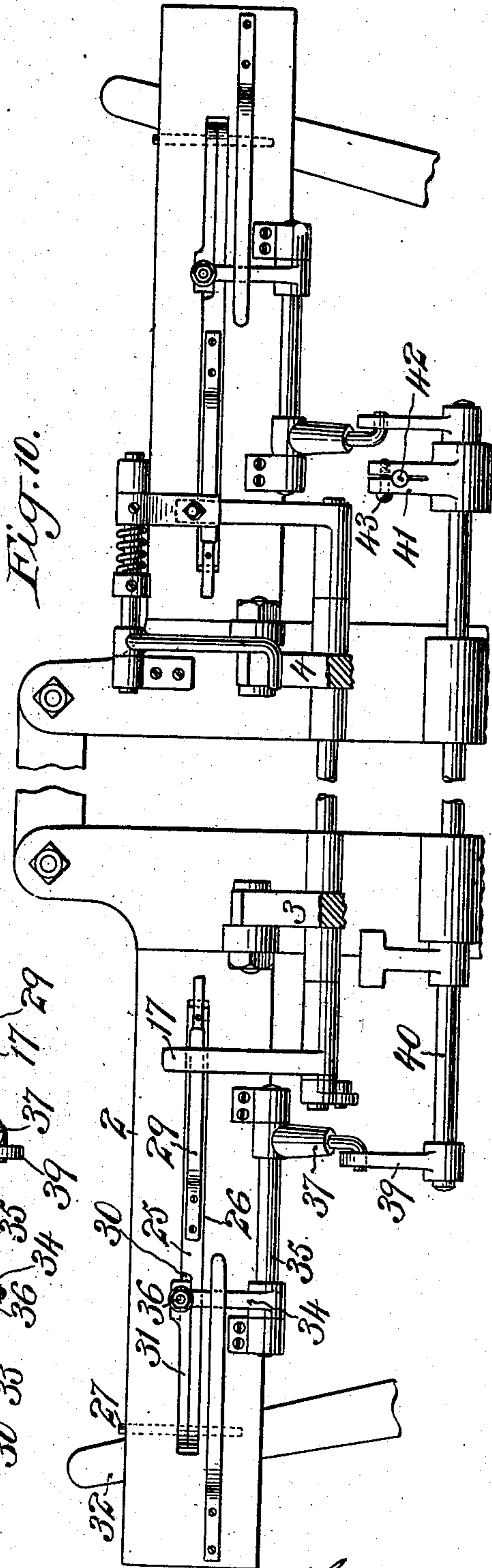


Fig. 10.

Witnesses: St. George Barry,
 Henry Thiele.

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UNITED STATES PATENT OFFICE.

WILLIAM J. LUTTON, OF PATERSON, NEW JERSEY.

PROTECTOR MECHANISM FOR LOOMS.

No. 900,403.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Application filed July 31, 1906. Serial No. 328,514.

To all whom it may concern:

Be it known that I, WILLIAM J. LUTTON, a citizen of the United States, and resident of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Protector Mechanism for Looms, of which the following is a specification.

My invention relates to looms and more particularly to means for throwing the loom out of action when the shuttle fails to seat properly in its box.

My present invention is not intended to supplant the bang-off mechanism as usually employed but is intended to act in conjunction therewith to more effectually prevent annoyance and damage from the breaking of threads, and particularly to prevent the loom from action until the shuttle has seated itself in the box in such position as to receive the proper impact from the picker to carry it completely across the shed.

In the accompanying drawings, Figure 1 is a view in end elevation of so much of a loom as will serve to illustrate my present invention, Fig. 2 is a section through the lay beam midway of one of the shuttle boxes, showing in elevation the parts immediately connected therewith, Fig. 3 is an enlarged view in end elevation of a part of the loom frame and lay beam showing the parts in the position which they assume when the shuttle fails to seat and the loom is to be stopped, Fig. 4 is a view of the controlling lever and parts connected therewith in the position which it assumes when the loom is in action, Fig. 5 is a view in transverse section through one of the loom boxes showing in elevation the parts connected with the sub-swell for stopping the loom or permitting it to act, the parts being in the position which they assume when the shuttle is fully seated within the box, Fig. 6 is a view in detail of the foot treadle for setting the trip lever, showing the parts in the position which they assume when the controlling lever is tripped, Fig. 7 is a similar view showing the parts in the position which they assume when the controlling lever is set to permit the loom to act, Fig. 8 is a top plan view of the shuttle boxes and parts connected therewith, the same being shown on an enlarged scale and the loom intermediate of the boxes being broken away, Fig. 9 is a horizontal section through one of the loom boxes, showing the shuttle partially seated therein, and Fig. 10

is a view in elevation of the parts shown in Fig. 8 looking toward the inner face of the lay.

The loom frame is denoted by 1; the lay beam by 2; the pitmen for operating the lay beam by 3 and 4; the drive shaft by 5; the brake wheel on the drive shaft by 6; the band brake by 7; the rocking arm for controlling the band brake by 8; the spring for actuating the said arm by 9; the rod connected with the rocking arm 8 and leading to the rocking lever by 10; the rocking lever by 11; the controlling lever fulcrumed in axial alinement with the rocking lever by 12; and the trip mechanism for the bang-off by 13.

The dagger for operating the trip mechanism is denoted by 14; the arm of the toggle lever for operating the dagger by 15 and 16; and the rocking arm subject to pressure from the binder in the shuttle box by 17.

The spring for operating the arm which leads to the foot of the controlling lever is denoted by 18; the arm itself by 19 and the foot of the controlling lever with its diagonal slot by 20.

The foot lever for setting the trip and releasing the brake is denoted by 21 and its rod leading upwardly therefrom to the arm on the rock shaft is denoted by 22; the crank arm with which it is connected at its upper end by 23 and the shaft which is rocked by it to operate the trip by 24.

The several parts above referred to are well known in the art and operate in the present instance as usual.

Referring to the parts shown on a larger scale in Figs. 3, 4, 5, and 8, 9 and 10, the shuttle box is provided with a binder which works through a slot in the side of the box and is pivoted near one end as at 27 to swing into the path of the shuttle when the shuttle is not in the box.

The shuttle is denoted by 28. As it is shown in Fig. 9, it has partially entered the box and is crowding the binder back out of its path.

The binder 25 is pressed toward the interior of the box by the action of a spring fixed at one end to its outer face, its free end being pressed upon by the arm 17 which operates the toggle lever 15, 16. The binder 25 is cut away as at 30 throughout a considerable extent from its pivoted end toward its free end preferably to a depth of about one-half its thickness and in this recess there

is provided what I am pleased to call a sub-swell 31. This is conveniently pivoted on the same pivot 27 on which the binder 25 is pivoted but is free to swing in and out independently of the binder 25.

The sub-swell 31 is located in such position that it will not be operated by the shuttle 28 until the shuttle has reached the limit of its movement toward the end of the box in position to be struck by the picker 32 a full blow to insure its travel across the shed.

When the shuttle is in the position shown in Figs. 8 and 9 the sub-swell is in its inwardly rocked position and when in this position, a position which it assumes under the pressure of the spring 33, the brake band will be held on the brake and the loom prevented from operating. This will be caused by the inward rocking position of an arm 34 on a rock shaft 35, the free end of the said arm 34 being provided with an adjustable bearing screw 36 which bears against the free end of the sub-swell 31 and determines the tension which the spring 33 shall have upon the sub-swell.

The rock shaft 35 has fixed thereon crank arm 37, the wrist pin on which engages an elongated open slot 38 in a crank arm 39 on a rock shaft 40, the said shaft being provided with a bifurcated clamping arm 41 between the branches of which a dagger rod 42 is held by means of a screw 43 in such position, see Fig. 3, that when the shuttle is in the position shown in Fig. 9, and the sub-swell 31 rocked inwardly, the dagger rod 42 will be in position to engage a tail piece 44 on the trip mechanism of the bang-off and will operate the bang-off by setting free the rocking lever 11 and through the brake rod 10 will rock the arm 8 to set the brake on the brake wheel. On the other hand, when the shuttle 28 enters its box, the full intended limit of its travel into position to receive the full impact of the picker 32, it will crowd the sub-swell 31 back out of the interior of the box against the tension of the spring 33 and in so doing will rock the arm 34, the shaft 35, the crank arm 37, the arm 39 and the shaft 40 in such a direction that the dagger rod 42 will occupy the position shown in Fig. 5, with its free end depressed out of the path of the tail piece 44 on the bang-off mechanism and so the lever 11 will not set the brake on the brake wheel 6 and the loom will be permitted to continue its operation.

By making the action of the binder independent of the action of the sub-swell, it becomes feasible to remove the pressure from the binder and hence leave the shuttle free to advance save only where it is held near its extreme end by the sub-swell thus giving it greater freedom of motion when once it is forced from the grip of the said sub-swell.

It will thus be seen that while the precau-

tions which have heretofore been provided against the continued action of the loom when there is occasion for arresting its action to prevent damage, have been left intact, I have provided an additional guard against annoyance from the shuttle when it fails to receive the full impact from the picker and as a consequence fails to entirely cross the shed, by requiring the shuttle to be seated at the extreme intended limit of its travel in the shuttle box before the loom can be set in operation, and, by so doing, I insure the complete throw of the shuttle because it must be seated where it will receive the full impact before the operation of the loom continues. Furthermore, this additional precaution has been provided for by a structure which will admit of its being readily applied to looms already in use as well as to those which may be subsequently built.

What I claim is:—

1. In a loom, the combination with a shuttle, a shuttle box, means for operating the shuttle and means for arresting the action of the loom, of a plurality of shuttle binders located in a shuttle box, one of said binders being at the extreme outer end of the shuttle path and means connecting the said movable gripping device with the loom stopping mechanism whereby the action of the loom is arrested when the shuttle fails to reach the limit of its travel in the box.

2. In a loom, the combination with a shuttle, a shuttle box, means for operating the shuttle and means for arresting the action of the loom, of a binder movable into and out of the path of the shuttle as it enters the box and a second binder or sub-swell movable independent of the aforesaid binder and out of position within the shuttle box to engage the shuttle as it approaches the limit of its throw and means connecting the said sub-swell with the loom arresting mechanism for preventing the action of the loom when the shuttle fails to seat.

3. In a loom, the combination with a shuttle, a shuttle box, means for operating the shuttle, means for arresting the action of the loom, of a binder pivotally secured in the shuttle box for gripping the shuttle as it enters the box, a sub-swell or binder independent of the aforesaid binder for gripping the end of the shuttle when it reaches the extreme limit of its travel and means for connecting the sub-swell or binder with the loom stopping mechanism for arresting the action of the loom when the shuttle fails to reach the intended limit of its throw.

4. In a loom, the combination with a shuttle box, a shuttle, a binder pivotally secured in the side thereof and a spring for actuating the binder, of a sub-swell pivotally secured to the shuttle box in proximity to the binder and free to swing independently thereof, a spring for operating the sub-swell

and a stop mechanism under the control of the sub-swell.

5 5. In a loom, the combination with a shuttle box, a shuttle, a binder pivotally secured therein and recessed throughout a portion of its length, of a sub-swell pivotally secured in said recessed portion of the binder, springs for operating the binder and sub-swell and a stop motion under the control of
10 the sub-swell.

15 6. In a loom, the combination with a shuttle box, a shuttle, a binder movable into and out of the path of the shuttle and a sub-swell movable into and out of the path of the shuttle, of a rock shaft under the control of the sub-swell, a dagger carried by the rock shaft and a stop motion under the control of the dagger.

7. In a loom, the combination with a shuttle, a shuttle box, means for operating the shuttle and means for arresting the action of the loom, of a plurality of shuttle retarding devices arranged to enter the shuttle box into the path of the shuttle and means for connecting one of these shuttle retaining devices with the stop mechanism of the loom independent of another. 20 25

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this 27th day of July, 1906. 30

WILLIAM J. LUTTON.

Witnesses:

THOMAS W. RANDALL,
CHARLES F. MOREHEAD.