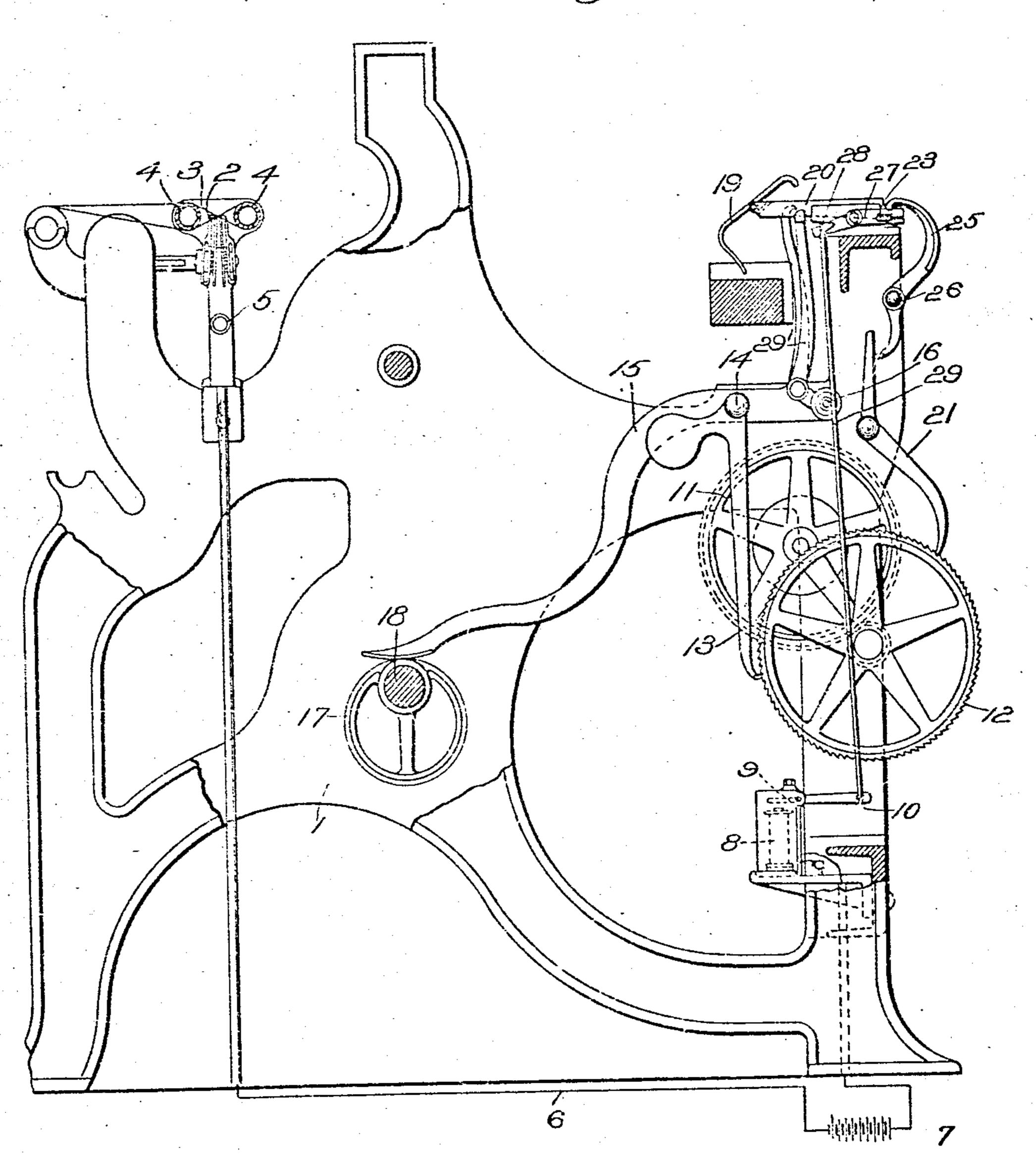
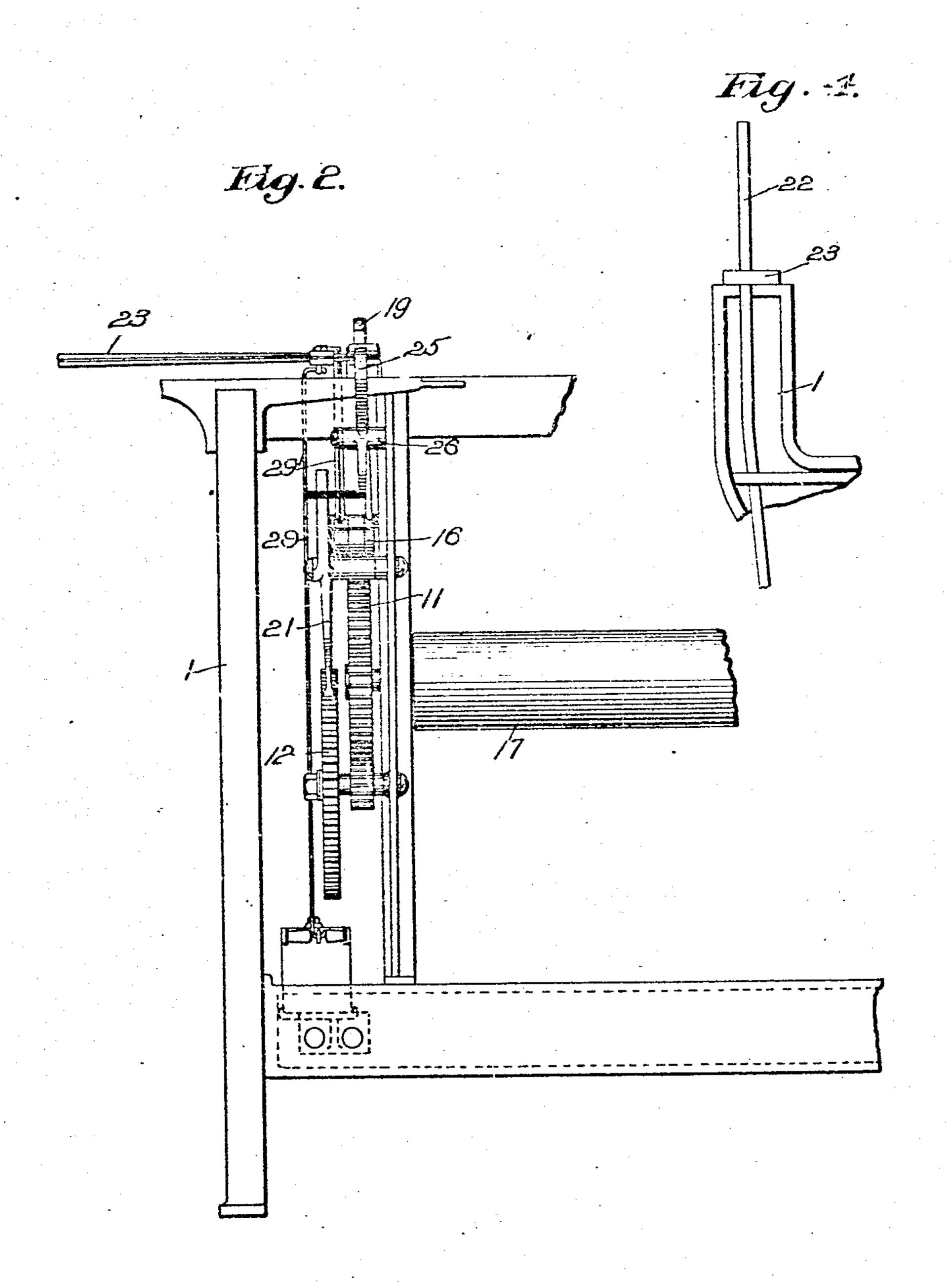
4 SHEETS-SHEET 1.

Fig. 1.



Witnesses. Jesse a. Holton. Irving U. Townsend Inventor: Charles Odanning by Energy SBorch. Atttys.

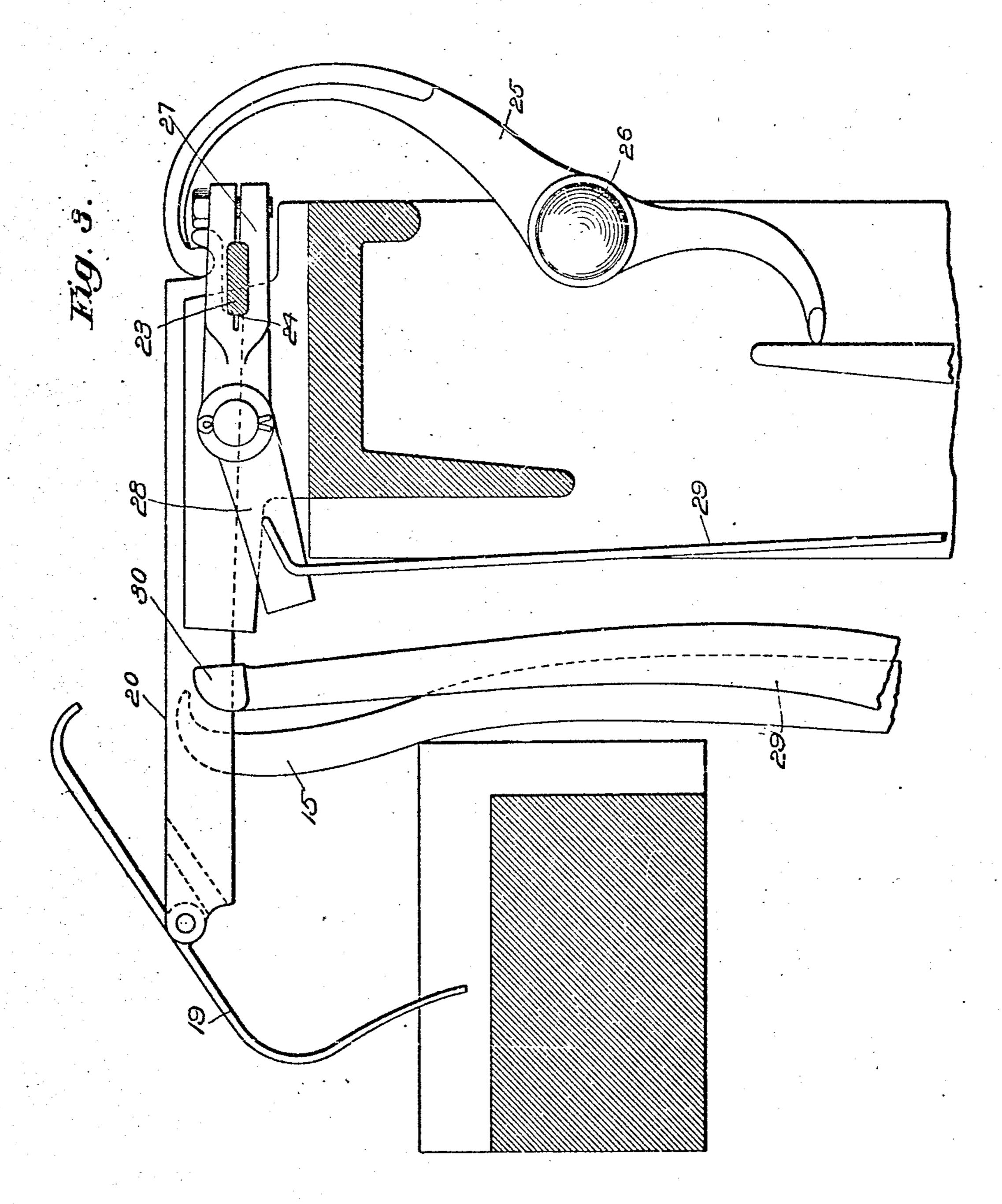
4 SHEETS-SHEET 2.



Witnesses. Jesse a. Holton. Ivnig U. Townsend

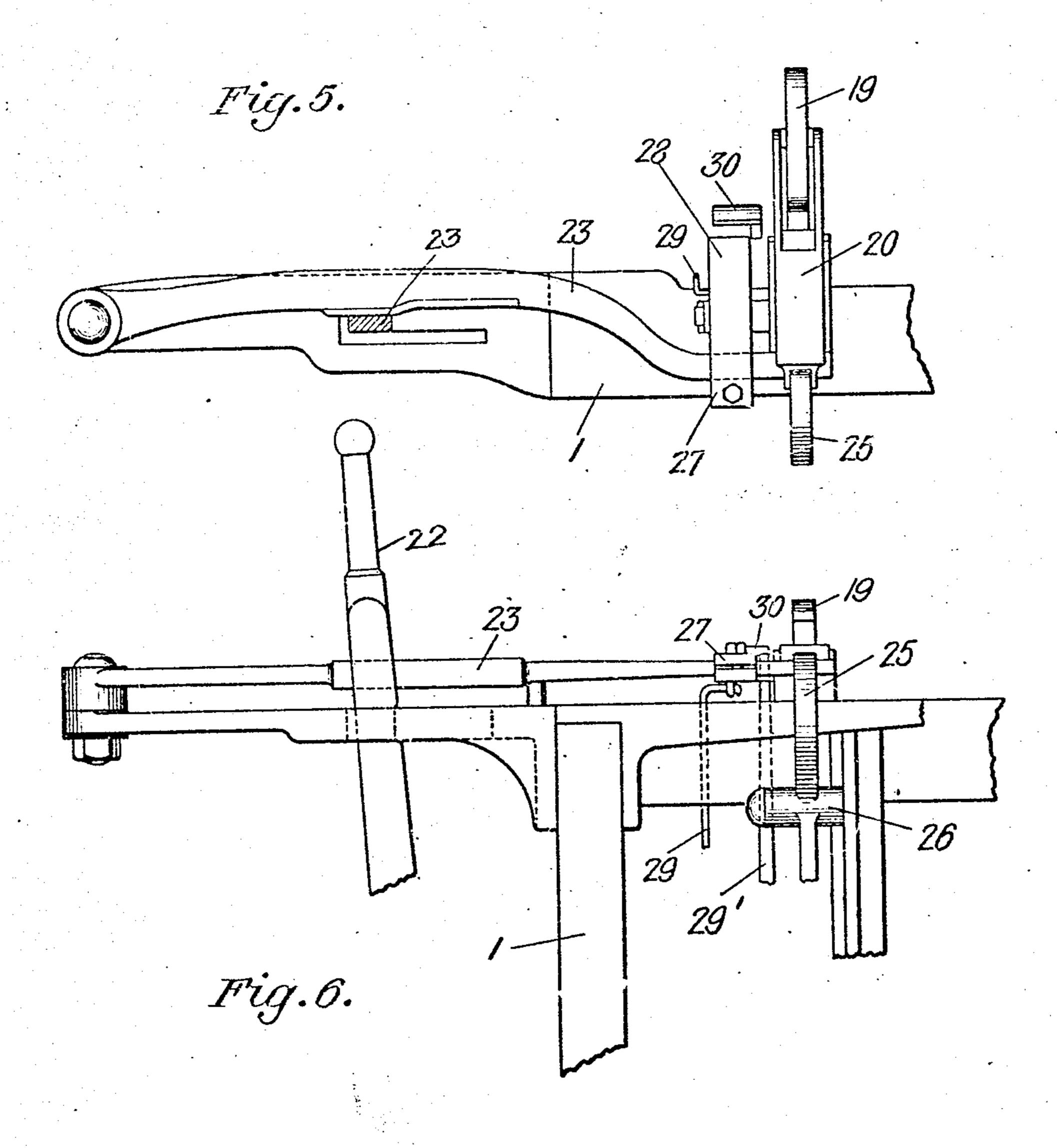
Charles D. Samming
By
County and Book! Fettys

4 SHEETS-SHEET 3.



Witnesses. Jesse a. Holton. Irving U. Townsens Inventor: Charles I. Lanning By Emery and Boock, Attys.

4 SHEETS-SHEET 4.



Witnesses: Jesse a. Holton. Twing U. Gownsen Inventor
Charles D. Laming
By Emery and Booth Attys

UNITED STATES PATENT OFFICE.

CHARLES D. LANNING, OF DORCHESTER, MASSACHUSETT'S

STOP-MOTION FOR LOOMS.

No. 871,875.

Specification of Letters Patent.

Patented Nov. 26, 1807.

Application filed February 23, 1907. Serial No. 358,822.

To all whom it may concern:

Be it known that I, CHARLES D. LANNING, a citizen of the United States, residing at Dorchester, in the county of Suffolk and State of 5 Massachusetts, have invented an Improvethe following description, in connection with the accompanying drawings, is a specification, like letters on the drawings represent-10 mg like parts.

This invention relates to stop motions which, while they may be of general application, are particularly intended for use in con-

nection with looms for weaving.

In order that the principles of the invention may be fully understood I have in the accompanying drawings typified one em-

bodiment thereof, wherein

Figure 1 is a vertical transverse section of 20 a loom whereto my invention is applied; Fig. 2 is a side elevation of a portion of a loom whereto my invention is applied; Fig. 3 is a vertical transverse section on an enlarged scale of a portion of the mechanism shown in 25 Figs. 1 and 2; Fig. 4 is a detail showing a portion of the shipper device, Fig. 5 is a plan view of the knock-off device in its relation to the parts operative upon warp fault and weft | 16 and adapted to be operated in any usual failure; and Fig. 6 is a side elevation thereof. 30 · An object of my invention is to provide a simple means for stopping the loom upon the occurrence of west failure or a warp fault. It is customary to employ the lay as a cooperating element to stop the loom in the event 35 of a warp fault, this being frequently accomplished by moving a bunter into the path of the lay whereupon the lay impacting upon the bunter throws the shipper handle out of its retaining notch and stops the loom. 40 Usually such bunter is at or near one end of the lay and the result of the impact of the lay upon the bunter is frequently to twist the lay, leaving a mark upon the goods. Preferably, therefore, I operate the shipper 45 lever upon the occurrence of either weft failure or warp fault from a reciprocating member mounted independently of the lay. By a reciprocating member, I mean one having movement relative to the shipper lever.

Referring to the drawings, the frame of the loom is indicated at 1, it being of any suitable construction. Herein, my invention is shown as applied to a loom of the type disclosed in the patent to Coldwell & Gildard, 55 No. 690,635, Jan. 7, 1902, although it will, of

be applied to any desired type of loom. While a warp stop motion of any suitable type may be employed, herein I employ warp drops 2 (Fig. 1) adapted to be mounted upon, 60 the warp threads 3, which may be suitably ment in Stop-Motions for Looms, of which supported upon leasing members 4, whereby upon the occurrence of a warp fault contact is made at one end of the warp drops with a bar 5, an electric circuit 6 having therein a 65 battery 7, being completed, the magnet 8 in said circuit being energized to attract the armature 9, so that in the present embodiment of the invention the member 10 of the armature may be elevated. The mag- 70 net 8 and its related parts may be suitably disposed at any desired part of the loom, it being herein shown as mounted upon the frame beneath the take-up mechanism.

> A cloth roll of any suitable type is indi- 75 cated at 11, it being operated in any suitable manner to take up the cloth as woven and herein by means of a ratchet gear 12 with the teeth whereof engages an actuating paw! 13 herein shown as pivotally 80 mounted at 14 upon a reciprocatory member 15, which, in the present embodiment of the invention, is a weft hammer pivoted at manner as by means of a cam 17 upon a cam 85 shaft 18, whereby upon alternate beats of the lay the upper portion of the west hammer is reciprocated to feel for the west fork 19, so that if it be not tilted by the presence of west, the west fork carrier 20 is moved upon 90 its support to stop the loom. Preferably I employ means herein consisting of a holding pawl 21 to prevent reverse movement of the cloth roll.

. A shipper device of any suitable type such 95. as that indicated in the patent to Coldwell & Gildard may be employed, and herein is indicated in Fig. 4 at 22, it being normally positioned in the usual notch, whereby the parts of the loom are maintained in running 100 position, the shipper device being adapted to be actuated to stop the loom in any suitable manner as by engagement therewith of a knock off device, herein represented as a lever 23, a portion thereof being shown in 105 side elevation in Fig. 2 and in vertical section in Figs. 1 and 3. As indicated most clearly in Fig. 3, when the weft fork 19 is not tilted, the weft fork carrier is moved to the right viewing said figure, by reason of 110 the engagement of the west fork by the west course, be apparent that the invention may | hammer 15, a shouldered portion 24 upon

pinging against the knock off lever, thereby moving the same to stop the loom.

Preferably I suspend the operation of the 5 tabe-up mechanism upon the occurrence of west failure and to that end may operatively connect the take-up mechanism in any suitable manner with the west fork carrier. Herein for the purpose, I employ a lever 25 10 pivoted at 26 upon the frame of the machine, the lower end of said lever being adapted to engage with a portion of the holding pawl 21, thereby to withdraw it from engagement with the ratchet gear 12 15 of the take-up mechanism, the upper end of said lever 25 engaging in any suitable manner with the west fork carrier 20 as indicated in Fig. 3, whereby upon movement of the carrier to the right viewing said figure the 20 holding pawl 21 is disengaged from the ratchet 12, thus suspending the action of the take-up mechanism.

In order to stop the loom on the occurrence of a warp fault without the use of the 25 lay as a cooperating element, I employ a movable member which, in the present embodiment of the invention, is the west hammer 15. Inasmuch as said welt hammer constitutes a portion of the train of mechan-30 ism for stopping the loom in the event of west failure, I am enabled, by using said weft hammer to stop the loom upon the occurrence of a warp fault, greatly to simplify the parts while at the same time over-35 coming the objections heretofore set forth incident upon the use of the lay as an element of the stop motion mechanism.

While I may operate the shipper lever upon the event of warp failure, by the use 40 of the movable member which herein is the weft hammer, in various ways, in the present type of the invention I bolt a casting 27 upon the knock-off lever as indicated in Figs. 1 and 3 and pivotally mount upon said east-45 ing a lever 28 operatively connected with the arm 10 of the armature as by a wire 29, whereby when the armature 9 is attracted | the lever 28 is elevated.

While I may in any desired manner em-50 ploy the weft hammer to cooperate with said lever 28 when elevated, in the present embodiment of the invention I belt upon one side of the weft hammer an auxiliary member 29 preferably having a head 30 55 projecting laterally from the plane of the body thereof, so that in the normal working of the parts the lever 28 when depressed is not impinged upon by the body of said auxiliary member 29. When said lever 28 60 is clevated as described, it is impinged upon by the head 30, thereby actuating the knock-off lever 23 to stop the loom.

As most clearly indicated in Fig. 3, the lever 25 which throws out of operation the

the lower side of the weft fork carrier im- I is so curved or formed that the knock-off lever may be actuated upon the occurrence of a warp fault without interrupting the take-up mechanism. In such event the knock-off lever 23 is moved from the posi- 70 tion indicated in Fig. 3 to the right viewing said figure without movement of the west fork carrier 20 and hence without movement of the lever 25.

> By the construction described, I avoid the 75 objection incident to mounting the armature of the magnet open the knock off lever or west fork carrier and am enabled independently to operate the knock off lever upon the occurrence of welt failure or warp fault. so Moreover I am embled to locate the magnet and armature at any desired part of the foom.

> By the employment of the west hammer 15, I am enabled to utilize the single cam 17 to stop the loom upon the occurrence of 85 either west failure or warp fault, thereby doing away with a multiplicity of parts.

Important features of my invention are the provision of simple means whereby, in looms equipped with the usual west-stop 90 mechanism, comprising a welt fork and a weft fork carrier or mounting, and means actunted by the movement of said carrier or mounting to release or throw the shipper handle, (perticularly where the take-up hold- 95 ing means are also released by or with the weft-fault-caused movement of said carrier) the same shipper handle releasing means can erative warp-fault-detecting-and-loom-stopbe use I as part of an independently coop- 100 erative warp-fault-detecting-and-loom-stopping mechanism without affecting said wellt fork carrier or take-up helding means: and the provision of means whereby, in a loom having the common west-stop mechanism, 105 comprising a west fork, west fork carrier, were hammer lever and other usual connections, the same vibratory member other than the lay, which in this embodiment of the invention is the west hammer lever, is made 110 part of warp-stop mechanism, coöperating independently of the weft-stop mechanism and operatively independent of the west fork, and west fork carrier.

While an electrical warp stop mechanism is 115 herein shown, it will be apparent that I am not to be restricted thereto save when expressly so stated in the claims.

Having thus described one type or embodiment of my invention, I desire it to be 120 understood that although I have employed specific terms, they are used in a descriptive and generic sense and not for purposes of limitation, the scope of the invention being set forth in the claims. 125

1. A loom comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knock off 65 holding pawl 21 of the take-up mechanism | device adapted to release the shipper device 130

from said retaining means, welt thread fault detecting means, devices cooperating therewith and with said reciprocatory member, whereby the knock-off device is moved and 5 the loom is stopped upon the occurrence of weft failure, warp thread fault detecting means, and means independent of said weft thread fault detecting means and of said devices cooperating therewith and adapted to 10 cooperate with said warp thread fault detecting means and with said reciprocatory membei, whereby the knock-off device is moved and the loom is stopped upon the occurrence

of warp failure.

15 · 2. A loom comprising a lay, a reciprocalay, a shipper device, means to retain the same in loom operating position, a knock-off device adapted to release the shipper device 20 from said retaining means, welt thread fault detecting means, devices cooperating therewith and with said reciprocatory member, whereby the knock-off device is moved and the loom is stopped upon the occurrence of 25 west failure, electric warp thread fault detecting means and means distinct from the said weft thread fault detecting means and devices cooperating therewith and adapted to coöperate with said warp thread fault de-30 teeting means and with said reciprocatory member, whereby the knock-off device is moved and the loom is stopped upon the occurrence of warp failure.

3. A loom comprising a lay, a reciproca-35 tory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knock-off from said retaining means, welt thread fault | of movement of the reciprocatory member. 40 detecting means, devices cooperating therewith and with said reciprocatory member, whereby the knock-off device is moved and | the loom is stopped upon the occurrence of west failure, drop bars mounted upon the 45 warp threads, means moved by an indicating drop bar into the path of movement of the reciprocatory member, said means being mounted independently of the west thread fault detecting means and devices cooper-50 ating therewith and adapted when moved into the path of movement of the reciprocatory member to be operated, thereby to

upon the occurrence of west failure.

55 4. A loom comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the ! same in loom operating position, a knock-off | the same when operated by the said reciprodevice adapted to release the shipper device 60 from said retaining means, a weft fork, a 65 device, warp facilt detecting means, and | vice from said retaining means, a west fork, 130

move the knock-off device and stop the loom

means distinct from said west fork slide and adapted upon the occurrence of a warp fault to be brought into the path of movement of the reciprocatory member, and thereby moved to operate the knock-off device.

5. A form comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knockoff device adapted to release the shipper de- 75 vice from said retaining means, a welt fork, a weft fork slide whereon the same is mounted, said slide being adapted to be moved by the reciprocatory member upon the occurrence of west failure, thereby to move the 80 tory member mounted independently of the knock-off device, drop bars supported upon the warp threads, and means moved by indiesting drop bars into the path of movement of the reciprocatory member, said means being disconnected from said west fork slide 85 and being adapted when brought into the path of movement of the reciprocatory member to be moved, thereby to operate the knock-off device.

6. A loom comprising a lay, a reciproca- 90 tory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knockoff device adapted to release the shipper device from said retaining means, a west fork, 95 a weft fork slide whereon the same is mounted, said slide being adapted to be moved by the reciprocatory member upon the occurrence of west failure, thereby to move the knock-off device, warp fault detecting 100 means, and means mounted upon the knockoff device and adapted upon the occurrence device adapted to release the shipper device | of a warp fault to be brought into the path

> 7. A loom comprising a lay, a reciproca- 105 tory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a kneck-off. device adapted to release the shipper devicefrom said retaining means, a west fork, a 110 weft fork slide whereon the same is mounted, sald slide being adapted to be moved by the reciprocatory member upon the occurrence of well failure, thereby to move the knockoff device, drop bars supported upon the 115 warp threads, circuit establishing means cooperating with an indicating drop bar and including a magnet mounted independently of the west fork slide, means moved by said magnet, when energized, into the path of the 120 said reciprocatory member and operatively connected to the knock-off device to move catory member.

8. A loom comprising a lay, a reciproca- 125 west fork slide whereon the same is mounted, | tory member mounted independently of the said slide being adapted to be moved by the Lay, a shipper device, means to retain the reciprocatory member upon the occurrence same in loom operating position, a knockof west failure, there's to move the knock-off off device adapted to release the shipper de-

a weft fork slide whereon the same is mount- | off device, drop bars supported upon the ed, said slide being adapted to be moved by | the reciprocatory member upon the occurrence of west failure, thereby to move the 5 knock-off device, electrical warp fault detecting means including a magnet mounted independently of the west fork slide, and | means moved by said magnet, when energized, into the path of the said reciprocatory | reciprocatory member, take-up mechanism, 10 member and operatively connected to the and means operative upon west failure to 75 knock-off device to move the same when suspend the operation thereof, said take-up

9. A loom comprising a lay, a reciprocatory member mounted independently of the 15 lay, a shipper device, means to retain the same in loom operating position, a knock-off device adapted to release the shipper device from said refaining means, a west fork, a weft fork slide whereon the same is mounted, 20 said slide being adapted to be moved by the reciprocatory member upon the occurrence of west failure, thereby to move the knockoif device, take-up mechanism, means to arrest the same upon the occurrence of weft. 25 failure, warp fauit detecting means, and means independent of said west fork slide opèratively connected to said warp fauit detecting means and adapted to be moved thereby into the path of movement of said 30 reciprocatory member and when moved by said reciprocatory member to thereupon operate the knock-off device, the take-up suspending mechanism being non-actuated upon the occurrence of warp failure.

10. A loom comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knockoff device adapted to release the shipper de-40 vice from said retaining means, a weft fork, a weft fork slide whereon the same is mounted, said slide being adapted to be moved by the reciprocatory member upon the occurrence of west failure, thereby to move the 45 knock-off device, drop bars supported upon the warp threads, and means mounted upon the knock-off lever and adapted upon the indicating movement of a drop bar to be brought into the path of movement of the 50 reciprocatory member, to thereupon operate the knock-off device, take-up mechanism, and means to arrest the operation of the same upon weft failure, said take-up suspending mechanism being non-actuated upon

55 the occurrence of warp failure. 11. A loom comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knock-off 60 device adapted to release the shipper device from said retaining means, a west fork, a weft fork slide whereon the same is mounted, · said slide being adapted to be moved by the reciprocatory member upon the occurrence

warp threads, electric circuit establishing means cooperating with an indicating drop bar and including a magnet mounted independently of the weft fork slide, means 70 operatively connected to said magnet and adapted when the latter is energized to be brought into the path of movemen, of said operated by the said reciprocatory member. | suspending mechanism being non-actuated upon the occurrence of warp fault.

12. A loom comprising a lay, a reciprocatory member mounted independently of the 80 lay, a shipper device, means to retain the same in bonn operating position, a knock-off device adapted to release the shipper device from said retaining means, take-up mechanism, operative connections between said re- \$5 ciprocatory member and said knock-off device, whereby the loom may be stopped upon west failure, operative connections between said reciprocatory member and the take-up mechanism, whereby the take-up may be in- 90 terrupted upon welt failure, warp fault defeeting mechanism, a movable member supported by the knock-off device and distinct from the said operative connections for stopping the loom upon well failure, and opera- 95 tive connections between said movable member und said warp fault detecting mechanism, whereby the loom may be stopped upon the occurred e of a warp fault.

13. A loom comprising a lay, a reciproca- 100 fory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knock-off device adapted to release the slupper device from said retaining means, take up mechan- 105 ism, operative connections between said reciprocatory member and said knock-off device, whereby the loom may be stopped upon west failure, operative connections between said reciprocatory member and the take-up 110 mechanism, whereby the take-up may be interrupted upon weft failure, warp fault detecting mechanism, a movable member mounted on the knock-off device and distinct from the said operative connections for 115 stopping the loom upon west failure, and operative connections between said movable member and said warp fault detecting meckanism, whereby the loom may be stopped upon the occurrence of a warp fault.

14. A loom comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knock-off device adapted to release the shipper device 125 from said rétaining means, take-up mechanism, operative connections between said reciprocatory member and said knock-off device, whereby the loom may be stopped 65 of west failure, thereby to move the knock- | upon west failure, operative connections be- 130

take-up mechanism, whereby the take-up may be interrupted upon weft failure, warp fault detecting mechanism, a movable mem-5 ber pivotally connected to the knock-off device, and operative connections between said movable member and said warp fault detecting mechanism, whereby the loom may be stopped upon the occurrence of a warp fault.

10 15. A loom comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knock-off device adapted to release the shipper device 15 from said retaining means, take-up mechanism, operative connections between said reciprocatory member and said knock-off device, whereby the loom may be stopped upon weft failure, operative connections between 20 said reciprocatory member and the take-up mechanism, whereby the loom may be interrupted upon weft failure, warp drops adapted to be supported upon the warp threads, an electric circuit including a magnet and 25 adapted to be completed upon the occurrence of a warp fault, an armaiure, a movable member supported by the knock-off device and distinct from the said operative connections for stopping the loom upon weft 30 failure and operative connections between the said movable member and said armature, whereby upon actuation of the armature said movable member is adapted to be brought into the path of movement of said 35 reciprocatory member to stop the loom.

16. A loom comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knock-off 40 device adapted to release the shipper device from said retaining means, take-up mechanism, operative connections between said reciprocatory member and said knock-off lever, whereby the loom may be stopped upon weft 45 failure, warp drops adapted to be supported upon the warp threads, an electric circuit including a magnet and adapted to be completed upon the occurrence of a warp fault, an armature, a movable member mounted 50 on the knock-off device and distinct from the said operative connections for stopping the loom upon weft failure, and operative connections between the same movable member and said armature, whereby upon actua-55 tion of the armature said movable member is adapted to be brought into the path of movement of said reciprocatory member to

stop the loom. 17. A loom comprising a lay, a recipro-60 catory member mounted independently of the lay, a shipper device, means to retain the same in leon operating position, a kneck-off | operative connections, whereby the loom device adapted to release the shipper device | may be stopped upon the occurrence of a

tween said reciprocatory member and the 1 ism, operative connections between said re- 65 ciprocatory member and said knock-off device, whereby the loom may be stopped upon west failure, warp drops adapted to be supported upon the warp threads, an electric circuit including a magnet and adapted to be 70 completed upon the occurrence of a warp fault, an armature, a movable member pivotally connected to the knock-off device, and operative connections between the said movable member and said armature, whereby 75 upon actuation of the armature said movable member is adapted to be brought into the path of movement of said reciprocatory

member to stop the loom.

18. A loom comprising a lay, a recipro- 80 catory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knock-off device adapted to release the shipper device from said retaining means, operative con- 85. nections between said reciprocatory member and said knock-off device, said operative connections being mounted independently of the knock-off device and adapted to cooperate therewith, whereby the loom may be 90 stopped upon the occurrence of weft failure, and operative connections between said reciprocatory member and the knock-off device, distinct from said previously mentioned operative connections, whereby the loom 95 may be stopped upon the occurrence of a warp fault.

19. A loom comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the 100 same in loom operating position, a knock-off. device adapted to release the shipper device from said retaining means, operative connections between said reciprocatory member and said knock-off device, whereby the 195 foom may be stopped upon the occurrence of weft failure, operative connections between said reciprocatory member and the knock-off device distinct from said previously mentioned operative connections, whereby the 110 doom may be stopped upon the occurrence of a warp fault, and take-up mechanism adapted

to be suspended upon west failure.

20. A loom comprising a lay, a reciprocatory men her mounted independently of the 115 lay, a shaper device, means to retain the same in loom operating position, a knock-off device adapted to release the shipper device from said retaining means, operative connections between said reciprocatory member and 120 said knock-off device, whereby the loom may. be stopped upon the occurrence of weft failure, operative connections between said reciprocatory member and the knock-off device distinct from said previously mentioned 125 from said retaining means, take-up mechan- | warp fault, and take-up mechanism adapted

to be suspended upon weft failure but continue in operation upon warp failure.

21. A loom comprising a lay, a reciprocatory member mounted independently of the 5 lay, a shipper device, means to retain the same in loom operating position, a knock-off device adapted to release the shipper device from said retaining means, warp drops adapted to be supported upon the warp threads, 10 an electric circuit including a magnet and adapted to be completed upon the occurrence of a warp fault, an armature, operative connections between said reciprocatory member and said knock-off device whereby the loom 15 may be stopped upon the occurrence of weft failure, and operative connections between said reciprocatory member and the knockmentioned operative connections and includ-20 ing said armature, whereby the loom may be stopped upon the occurrence of a warp fault. 22. A loom comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the j .25 same in loom operating position, a knock-off ! device adapted to release the shipper device from said retaining means, warp drops adapt- {

connections between said reciprocatory memloom may be storped upon the occurrence 35 of west failure, operative connections between said reciprocatory member and the viously mentioned operative connections and including said armature, whereby the stopped upon the occurrence of a warp fault. 40 loom may be stopped upon the occurrence of [west failure, the connections being such that \ 45 upon the occurrence of warp failure.

23. A loom comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knock-off zo device adapted to release the shipper device from said retaining means, a weft faiture detecting device, a carrier therefor, said carrier being separate from but operatively connect- [ed to the knock-off device and adapted to be | warp fault. 55 actuated by said reciprocatory member upon

tory member mounted independently of the lay, a shipper device, means to retain the 65 same in loom operating position, a knock-off device adapted to release the shipper device; from said retaining means, a west failure detecting device, a carrier therefor, said carrier being operatively connected to the knock-off 70 device and adapted to be actuated by said reciprocatory member upon the occurrence of west failure, whereby the loom may be stopped and a device independent of said carrier adapted to be actuated upon the oc- 75 currence of a warp fault, operative connections therefrom to the knock-off device, whereby the loom may be stopped upon the occurrence of a warp fault, take-up mechanism and means to operate the same upon 80 off device, distinct from said previously the occurrence of west failure, the connections being such that the take-up mechanism is not interrupted upon the occurrence of a warp failure.

25. A loom comprising a lay, a reciproca- 85 tory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a knock-off device adapted to release the shipper device from said retaining means, said reciproca- 90 ed to be supported upon the warp threads, I tory member having two operating portions. an electric circuit including a magnet and ja west sailure detecting device, a carrier 30 adapted to be completed upon the occur- therefor, said carrier being mounted inderence of a warp fault, an armature, operative | pendently of but adapted to operate the knock-off device and adapted to be actuated 95 ber and said knock-off device, whereby the | by one of said portions of said reciprocatory member upon the occurrence of west failure, thereby to stop the loom, and operative connections between said other operating porknock-off device distinct from said pre-1 tion of the reciprocatory member and the 100 knock-off device, whereby the loom may be

26. A loom comprising a lay, a west hama warp fault, take-up mechanism, and means | mer, a shipper device, means to retain the to interrupt the same upon the occurrence of same in loom operating position, a knock-off 195 device adapted to release the shipper device the take-up mechanism is not interrupted from said retaining means, a west fork, a west fork carrier therefor mounted independently of but adapted to operate the knock-off device, whereby upon the occurrence of weftfail- 110 ure the loom may be stopped, a member carried by said weft hammer and positioned out of the path of movement of the west fork, and operative connections between said member and the knock-off device, whereby the loom 115 may be stopped upon the occurrence of a

27. A loom comprising a lay, a west hamthe occurrence of west failure, whereby the | mer, a shipper device, means to retain the loom may be stopped, and a device inde- same in loom operating position, a knock-off 120 pendent of said carrier adapted to be actu- | device adapted to release the shipper device ated upon the occurrence of a warp fault, from said retaining means, a weft fork, a weft 60 and operative connections therefrom to the flork carrier therefor mounted independently knock-off device, whereby the loom may be of but adapted to operate the knock-off destopped upon the occurrence of a warp fault. | vi e. whereby upon the occurrence of west 125 24. A loom comprising a lay, a reciproca- | failure the loom may be stopped, a member

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carried by said weft hammer and in its mosuspend the operation thereof upon the oction not impinging upon the west fork, a currence of west failure. movable member mounted upon the knock-

off device and adapted to be actuated by said 5 member carried by the west hammer, whereby upon the occurrence of a warp fault the knock-off device is actuated to stop the loom. 28. A loom comprising a lay, a west hammer, a shipper device, means to retain the 19 same in loom operating position, a knock-off device adapted to release the shipper device from said retaining means, a west fork, a west

fork carrier therefor mounted independently of but adapted to operate the knock-off de-15 vice, whereby upon the occurrence of weft failure the loom may be stopped, a member carried by said weft hammer and in its motion not impinging upon the west fork, a movable member pivotally mounted upon 20 the knock-off device and adapted to be actu-

ated, whereby upon the occurrence of a warp. fault the knock-off device is actuated to stop the loom.

29. A loom comprising a lay, a weft ham-25 mer, a shipper device, means to retain the same in loom operating position, a knock-off device adapted to release the shipper device from said retaining means, warp drops adapted to be supported upon the warp threads, 30 an electric circuit including a magnet and adapted to be completed upon the occurrence of a warp fault, an armature, a movable member supported by the knock-off device, a west fork, a west fork carrier therefor, 35 whereby upon the occurrence of west failure the loom may be stopped, a member carried by said weft hammer and in its motion not 40 being adapted to be actuated by said mem- | actuated by said member carried by the weft

may be stopped. 45 mer, a shipper device, means to retain the failure. same in loom operating position, a knock-off 50 in electric circuit including a magnet and | to release the shipper device, a movable 55 whereby upon the occurrence of west failure | being mounted separately from but adapted 60 being adapted to be actuated by said member | knock-off device being adapted to be actu-

31. A loom comprising a lay, a west hanimer, a shipper device, means to retain the same in loom operating position, a knock-off device adapted to release the shipper device from said retaining means, warp drops adapt- 70 ed to be supported upon the warp threads, an electric circuit including a magnet and adapted to be completed upon the occurrence of a warp fault, an armature, a movable member supported by the knock-off device, a weft 75 fork, a west fork carrier therefor, whereby upon the occurrence of weft failure the loom may be stopped, a member carried by said west hammer and in its motion not impinging upon the west fork, said movable mem- 80 ber supported by the knock-off device being adapted to be actuated by said member carried by the weft hammer, whereby upon the occurrence of a warp fault the loom may be stopped, take-up mechanism, and means to 85. interrupt the same upon the occurrence of weft failure, the take-up suspending mechanism being non-actuated upon the occurrence

of warp failure. 32. A loom comprising a lay, a west ham- 90 mer, a shipper device, means to retain the same in loom operating position, a knock-off device adapted to release the shipper device from said retaining means, warp fault detecting means, a movable member supported 95 by the knock-off device, a west fork, a west fork carrier therefor, whereby upon the occurrence of west failure the loom may be stopped, a member carried by said weft hammer and in its motion not impinging on the 100 impinging upon the west fork, said movable | west fork, said movable member supported member supported by the knock-off device | by the knock-off device being adapted to be ber carried by the weft hammer, whereby hammer, whereby upon the occurrence of a upon the occurrence of a warp fault the loom | warp fault the loom may be stopped, take-up 105 mechanism, and means to suspend the oper-30. A loom comprising a lay, a west ham- | ation thereof upon the occurrence of west

33. A loom comprising a lay, a reciprocadevice adapted to release the shipper device | tory member independent thereof, a shipper 110 from said retaining means, warp drops adapt- | device, means to retain the same in loom oped to be supported upon the warp threads, | erating position, a knock-off device adapted adapted to be completed upon the occur- | member supported by the knock-off device, a rence of a warp fault, an armature, a mov- | west fork, a west fork carrier therefor, where- 115 able member supported by the knock-off de- | by upon the occurrence of weft failure the vice, a west fork, a west fork carrier therefor, I loom may be stopped, said west fork carrier the loom may be stopped, a member carried | to operate said knock-off device and a memby said west hammer and in its motion not beer carried by said west hammer and in its 120 impinging upon the west fork, said movable | motion not impinging upon the west fork, member supported by the knock-off device said movable member supported by the carried by the wef, hammer, whereby upon the lated by said member carried by the weft occurrence of a warp fault the loom may be | hammer, whereby upon the occurrence of a 125 stopped, take-up mechanism, and means to warp fault, the loom may be stopped.

34. In a loom having a lay, a shipper han- 1 37. In a loom having a lay, a shipper han- 65 loom-operating position, means adapted, upon release of said shipper handle, to throw 5 said shipper handle to a loom-stopping posi--tion, and a shipper handle releasing device: the combination of west-thread-fault-detecting-and-loom-stopping devices, a west hammer lever, actuating means therefor, a weft 10 hammer, a west fork, and a west fork carrier, adapted, upon occurrence of a west thread | fault, to actuate said shipper handle releasing device and thereby stop the loom, and independently cooperating warp-thread-fault-15 detecting-and-loom-stopping devices, operatively independent of said weft fork and weit fork carrier and adapted, upon the occurrence of a warp-thread fault, to actuate said shipper handle releasing device and thereby 20 stop the loom.

35. In a loom having a lay, a slupper handle, means to retain said shipper handle in loom-operating position, means adapted. upon release of said shipper handle, to throw 25 said shipper handle to a loom-stopping position, a shipper handle releasing device, takeup mechanism, and holding means therefor, adapted to be moved and to release the take-30 shipper headle releasing device; the combi- | means, take-up mechanism and take-up 35 adapted, upon the occurrence of a weftreleasing device and to disengage said takeup holding means; and independently cooperating warp-thread-fault-detecting-and-45 up holding means.

36. In a loom having a lay, a shipper handle, means to retain said shipper handle in loom-operating position, and means adapted to throw said shipper handle to a loom-stop-50 ping position; the combination of weft-faultdetecting-and-loom-stopping devices, comprising a vibratory member other than the | dle, means to retain said shipper handle in lay, and means including a west-fault detec-. 55 to be actuated by said vibratory member to | ping position; the combination of west fault stop the loom upon occurrence of a west-| detecting and loom stopping devices, com- 120 thread fault; and independently cooperating | prising a shaft, a rotary cam member therewarp-thread-fault-detecting-and-loom-stop-60 bratory member and adapted to be operated | tween said rotary cam member and said weft thereby to stop the loom on occurrence of a | fault detector and carrier adapted to be ac- 125 warp-thread fault, but operatively inde- | tuated by said rotary cam member to stop pendent of the movable carrier on which the loom upon occurrence of a west thread said weft-fault detector is mounted.

dle, means to retain said shipper handle in I dle, means to retain said shipper handle in Joom-operating position, and means adapted, upon the release of said shipper handle by said retaining means, to throw said shipper handle to a loom-stopping position, and 70 a shipper-handle-releasing device; the com-Linacion of well-thread-fault-detecting-anddoom-scopping devices, inch.ing. a west nammer lever, actualing means therefor, a west hannaer, a west fork and a west fork 75 carrier, adapted, through the actuation thereby of the shipper handle releasing device, to scop the foom upon occurrence of a warp-thread-fault- and independently cooperating warp chread faust detecting-and- 80 doom-stopping devices, including stopping means intermediate said weft hannier lever and said shipper handle operatively related to said well hammer lever but operatively independent of said weft fork and weft fork 85 carrier and adapted to stop the loom upon occurrence of a warp-thread fault.

38. In a loom having a lay, a shipper hande, means to retain said shipper handle in doom-operating position, means adapted, 90 upon the release of said shipper handle to throw said shipper handle to a loom-stepup on a west-fault stopping movement of said | ping position, shipper handle releasing nation of west-thread-sault-detecting-and- i mechanism holding means; the combination 95 loom-stopping devices, including a weft ham- | of weft-thread-fault-detecting-and-loommer lever, actuating means therefor, a weft | stopping devices, including a weft hammer hammer, a west fork and a west fork carrier, | lever, actuating means therefor, a west hammer, a west fork, and a west fork carrier, thread-fault to actuate said shipper bandle | adapted, upon occurrence of a west-thread 100 fault, to actuate said shipper handle releasing means, thereby to cause the stopping of the Joom and further adapted to cause loor, - stopping devices, operatively inde- the release of said take-up mechanism holdpendent of said west fork, west fork carrier, ing means; and independently cooperating 105 and take-up holding means, and adapted, | warp-thread-fault-detecting-and-loom-stopupon occurrence of a warp-thread fault, to | ping devices, including stopping means instop the loom without actuation of said take- | termediate said weft hammer lever and shipper handle operatively related to said west hammer but operatively independent 110 of said weft fork, weft fork carrier and said

39. In a loom having a lay, a shipper han- 115 doom operating position, and means adapted tor and a movable carrier therefor, adapted to throw said shipper handle to a loom stopon, a west fault detector and a movable carping devices, operatively related to said vi- | rier therefor, an operative connection befault, and independently cooperating warp

take-up holding means and adapted to stop

the loom without affecting said take-up,

upon occurrence of a warp-thread fault.

thread fault detecting and loom stopping devices operatively related to said rotary cam member and adapted to be operated thereby to stop the loom on occurrence of a warp thread fault, but operatively independent of the movable carrier on which said weft fault detector is mounted.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES D. LANNING.

Witnesses:

ARTHUR E. CARSON, IRVING U. TOWNSEND.