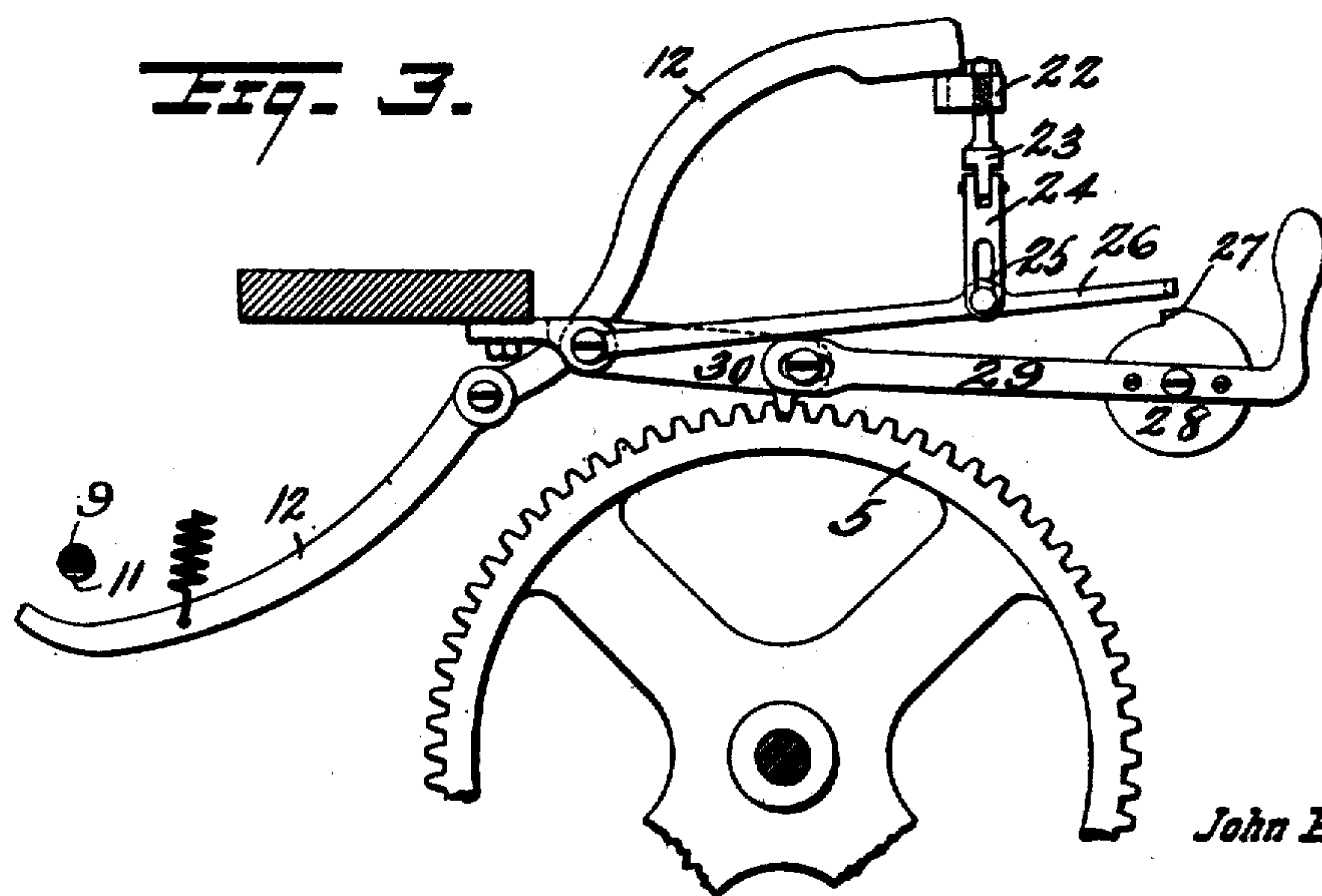
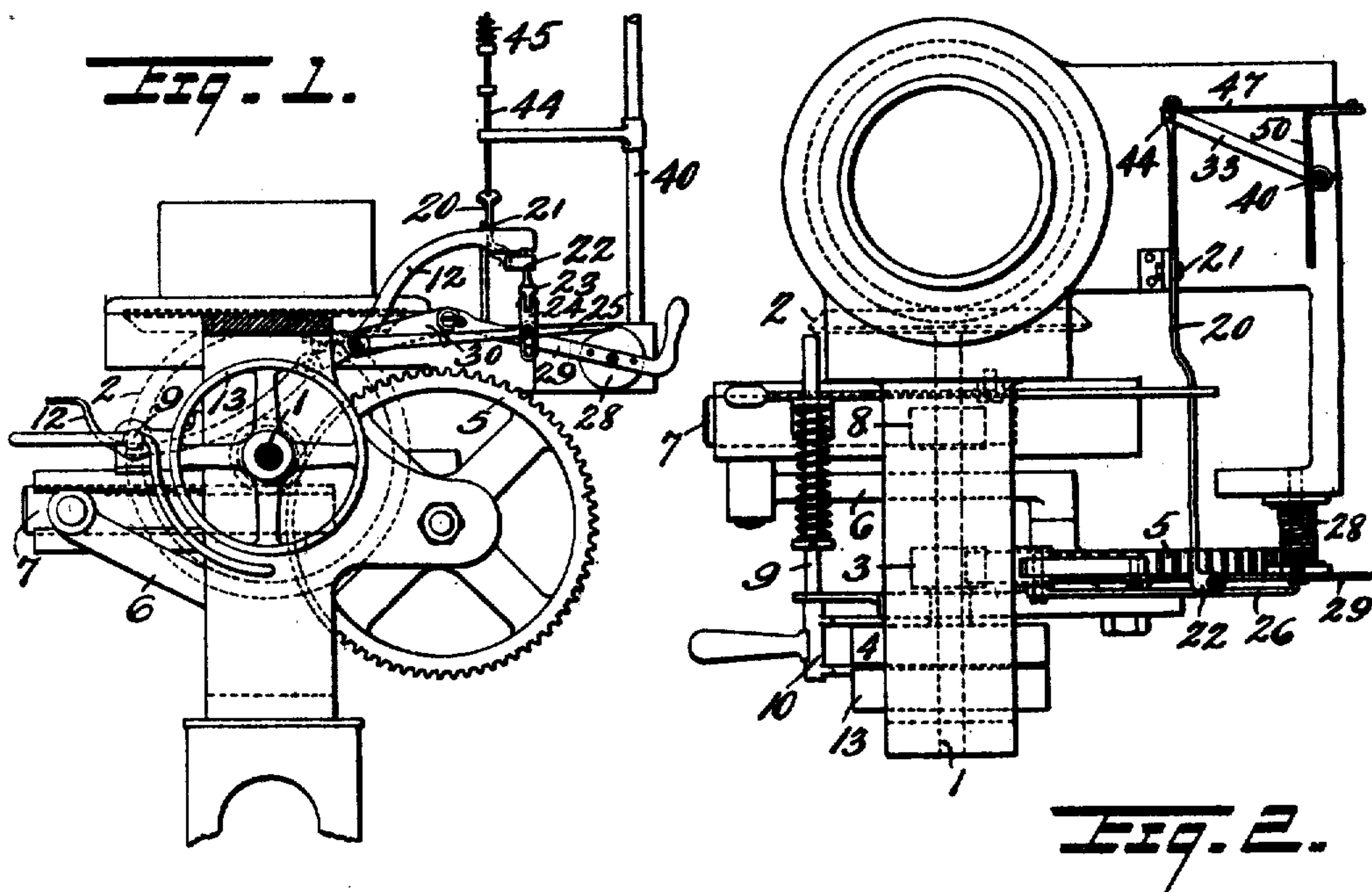


J. B. HIPWELL.
STOP MOTION FOR KNITTING MACHINES.
APPLICATION FILED APR. 12, 1907.

906,880.

Patented Dec. 15, 1908
2 SHEETS—SHEET 1.



John B. Hipwell,
Inventor

Witnesses
[Signature]
D. M. Stewart

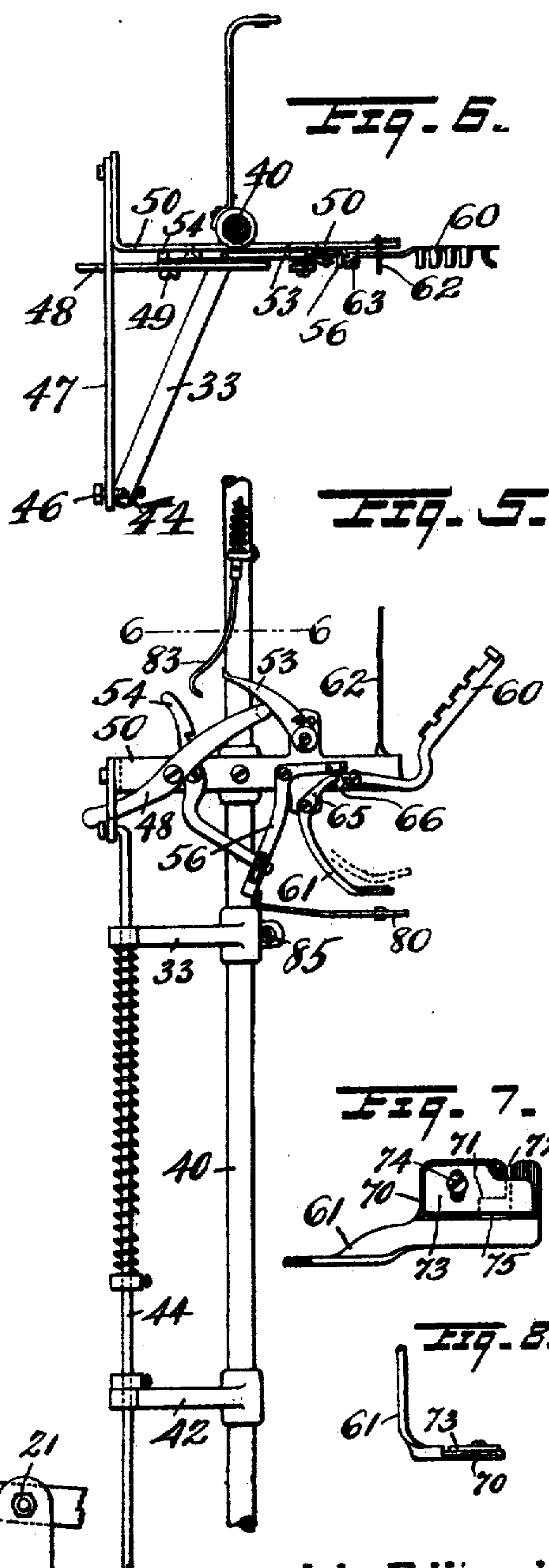
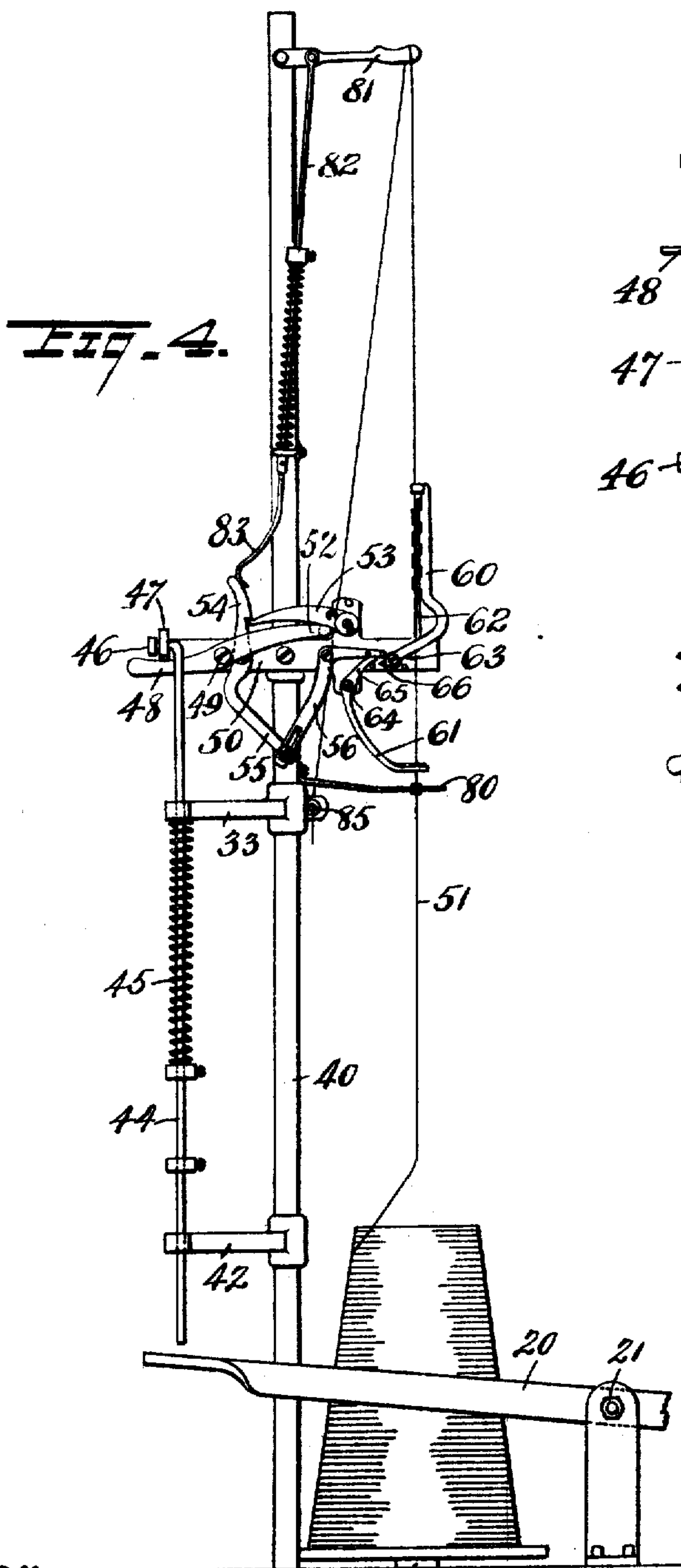
By *[Signature]*
Attorney

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by

[Signature]

Attorney

UNITED STATES PATENT OFFICE.

JOHN B. HIPWELL, OF READING, PENNSYLVANIA, ASSIGNOR TO WINDSOR MACHINE COMPANY, OF READING, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

STOP-MOTION FOR KNITTING-MACHINES.

No. 906,880.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed April 12, 1907. Serial No. 367,828.

To all whom it may concern:

Be it known that I, JOHN B. HIPWELL, a citizen of the United States, and a resident of the city of Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Stop-Motions for Knitting-Machines, of which the following is a specification.

My invention relates particularly to circular knitting machines in which relatively fixed bobbins are employed, and it consists in improved mechanism whereby the machine will be promptly stopped automatically either by the failure of the thread, by undue tautness of the same, or when bunches or knots occur.

Figure 1 is a sectional elevation of a portion of a knitting head indicating the belt-shifter mechanism and detent-catch in their relation to the stop motion provided to automatically operate the same. Fig. 2 is a corresponding plan view, and Fig. 3 an enlarged view of certain of the parts indicated in different position in Fig. 1. Fig. 4 shows the stop-motion mechanism in connection with the fixed bobbin, the parts being represented in normal operative position. Fig. 5 is a fragmentary view corresponding with Fig. 4, but indicating the position the parts assume when operated by the failure or tightening of the thread. Fig. 6 is a sectional plan view taken on the line 6-6 of Fig. 5. Figs. 7 and 8 are separate views of the knot-finger.

As indicated in Figs. 1 and 2 the pulley shaft 1, which drives the cam cylinder through bevel gear 2, is provided with a pinion 3 fixed to the pulley 4 and meshing with a crank-gear 5; which latter is connected by a rod 6 to a rack-bar 7 so as to impart reciprocating movement to the shaft 1 and the cam cylinder when a clutch on said shaft (not shown) is thrown into engagement with a rack engaging pinion 8; the particular construction indicated being more fully shown in Patent No. 817,775, issued to me April 17th, 1906. The guide-bar 9 of the spring pressed belt shifter 10 is provided with a notch 11 to receive a spring-lifted latch lever 12, the depression of which releases the belt-shifter to throw the belt to the loose pulley 13. To provide for depressing this latch lever 12 automatically by means of the attached mechanism hereafter described, and for simultaneously throwing into action

a positive stop, I provide a transversely arranged stop lever 20, pivoted at 21 to the machine and extending under the inner end of the latch lever 12. As shown I carry upon the projected end 22 of this stop lever, by means of a suitable hanger 23, 24 having a slotted connection 25, the free end of a latch 26, adapted when lowered to engage the notched rim 27 of a spring depressed detent-operating arm 29 arranged to lower the pivoted detent 30 into engagement with the gear wheel 5 when the latch 26 is raised, and to swing it out of engagement therewith before restarting the machine. As shown, the notched ring 27 is fixed to the arm 29 concentric with its pivotal axis, and the arm is normally depressed by a coiled spring 28 as indicated in Fig. 2.

My improved stop motion attachment is carried by a standard 40 secured to the machine frame adjacent the bobbin post 41. To this standard are secured brackets 42 and 43 which serve as guides for a vertically movable stop or hammer-rod 44 arranged directly above the end of the stop motion lever 20 as shown in Fig. 1, so that the descent of said hammer-rod, actuated by a spring 45, will depress said end of lever 20 for the purpose of operating the belt-shifter 10 and detent 30 as already described. The upper end 46 of the hammer-rod is connected to the outer end of a pivoted arm 47, which arm is normally held in the elevated position indicated in Fig. 1, by a hammer-rod lever 48, pivoted at 49 to a bracket 50 on the standard 40; said lever 48 being supported by a trigger mechanism which is automatically operated by the thread 51 from the bobbin, as will now be described.

The inner end 52 of the lever 48 is normally depressed to raise the hammer-rod 44, by means of a trigger-engaging arm 53 the free end of which is held by the notched trigger 54. This trigger has an arm 55 which is engaged by a trigger-operating trip lever 56, one arm of which as shown, is arranged in the path of two tripping fingers arranged to engage the thread 51,--namely the feeler-finger 60, and the knot-finger 61. The feeler-finger 60 is of ordinary construction, being pivoted at 62 and normally held in vertical position by the passage of the thread between it and the correspondingly grated fixed member 62, as in Fig. 1. The knot-finger 61, which is pivoted to the bracket 50 at 64, is

provided with a tripping-projection 65, which, like the similar projection 66 of the feeler-finger 60, is normally located in close proximity to the before mentioned arm of the trigger-operating lever 56 so that an upward movement of the thread engaging end of the knot-finger will swing said lever 56 in the same manner as does the fall of the feeler-finger 60 (see Fig. 5) so as to in either case release the trigger 54 and permit the fall of the hammer-rod 44.

The thread engaging end of the knot-finger 61 is preferably constructed as indicated in Figs. 7 and 8, to provide for adjustably gaging the passing thread and obstructing the passage of any objectionable enlargement or knot. The horizontal thread plate 70 is formed with an enlarged thread opening 71, and with a threading-slot 72 leading thereto; and this opening and slot are covered by an adjustable gage-plate 73, which may be secured by a screw 74 in such position as to provide any desired width of passage 75 for the thread, whereby any abnormal enlargement of the latter will be barred, and consequently act upon the finger to raise it and release the hammer-rod trigger as previously described.

The thread 51 from the bobbin, after passing through the fixed guide eye 80 and the knot-finger 61, and feeler-finger 60, as described, is carried upon the sweep 81, which is pivoted to the top portion of the standard 40 and normally held in approximately horizontal position by a spring-pressed rod 82 so as to be readily depressed by any undue tension upon the thread. As shown this spring-pressed supporting rod 82 for the sweep, is provided at its lower end with a trigger-operating finger 83 arranged to contact with the trigger-54 so as to directly release the latter when the sweep is depressed; the thread, which extends through the guide-eye 85 to the machine, being thereafter released from the sweep so as to provide ample slack during the stoppage of the machine.

What I claim is:—

1. The combination with a drive member shifting lever and rotary gear wheel, of a detent for the latter, a spring pressed operating lever for said detent, a latch device for said operating lever, a pivoted stop-lever arranged to successively operate said shifting lever and latch, and a stop-motion mechanism adapted to automatically actuate said stop-lever substantially as set forth.

2. The combination with a drive member shifting lever and rotary gear wheel, of a detent for the latter, an operating lever for

said detent having a latch, a pivoted stop-lever arranged to operate said shifting lever and having a slotted-link connection to said latch, and a stop-motion mechanism adapted to automatically actuate said stop-lever substantially as set forth.

3. In a stop-motion mechanism the combination with the movable stop-rod and movable thread-feeler finger, of the pivoted carrying arm for said rod, the pivoted stop-rod lever arranged to normally support said carrying arm, the trigger-engaging arm and the notched trigger arranged to normally support said stop-rod lever, and the pivoted trip-lever connected to said trigger and adapted to be operated by the feeler finger, substantially as set forth.

4. In a stop-motion mechanism the combination with the movable stop-rod and the thread-carrying sweep, of the pivoted carrying arm for said rod, the pivoted stop-rod lever arranged to normally support said carrying arm, the trigger-engaging arm and the notched trigger arranged to normally support said stop-rod lever, and the spring-pressed supporting rod for said sweep arranged to engage and operate said trigger, substantially as set forth.

5. A stop-motion mechanism comprising a movable stop-rod, a carrying lever therefor, a pivoted trigger and trigger-engaging arm supporting said carrying lever, a trip-lever for said trigger, and movable feeler and knot fingers arranged to independently operate said trip-lever, substantially as set forth.

6. A stop-motion mechanism comprising a movable stop-rod, a carrying lever therefor, a pivoted trigger and trigger-engaging arm supporting said carrying lever, a thread-carrying sweep with spring-pressed carrying rod adapted to operate said trigger, and movable feeler and knot-fingers arranged to separately operate the same, substantially as set forth.

7. In a stop-motion mechanism, a knot-finger comprising a relatively fixed plate having an enlarged thread-opening with a threading-slot leading thereto, and a gage-plate supported upon said fixed plate and adjustably secured thereto to cover regulated portions only of said slot and thread-opening and thereby limit the thread passage-way substantially as set forth.

In testimony whereof, I affix my signature, in the presence of two witnesses.

JOHN B. HIPWELL.

Witnesses:

D. M. STEWART,
W. G. STEWART.