B. F. RHODES.

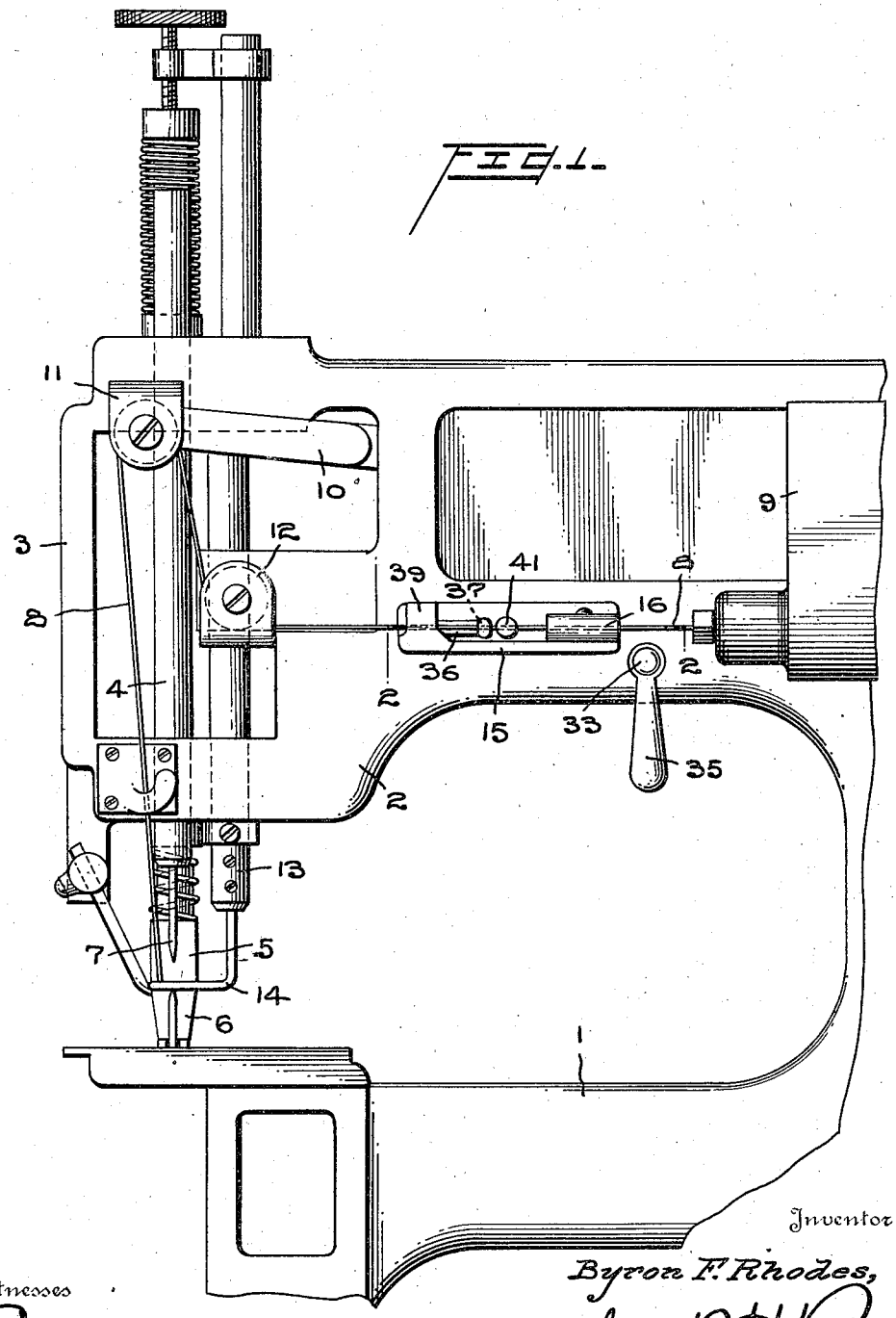
PULL-OFF MECHANISM FOR SEWING MACHINES.

APPLICATION FILED AUG. 16, 1915.

1,179,038. Patented Apr. 11, 1916.

3 SHEETS—SHEET 1.

FIG. 1.



Witnesses

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3 SHEETS—SHEET 2.

FIG. 2.

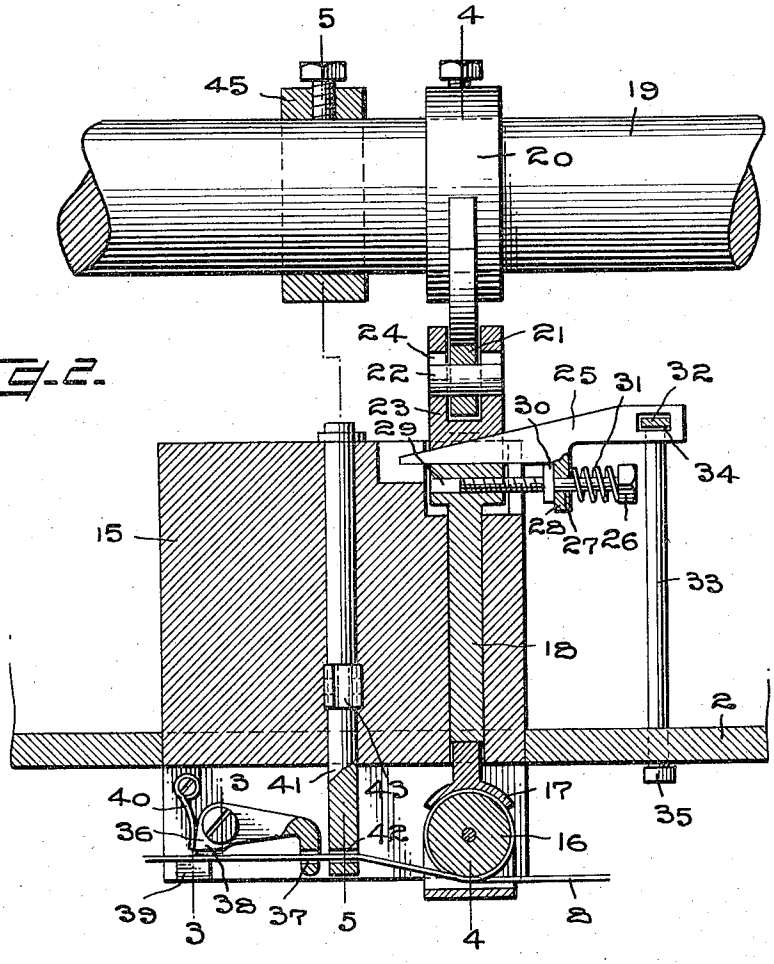
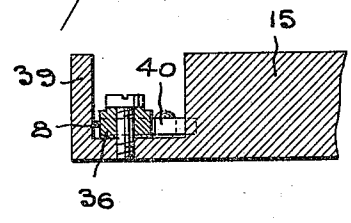


FIG. 3.



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3 SHEETS—SHEET 3.

FIG. 4.

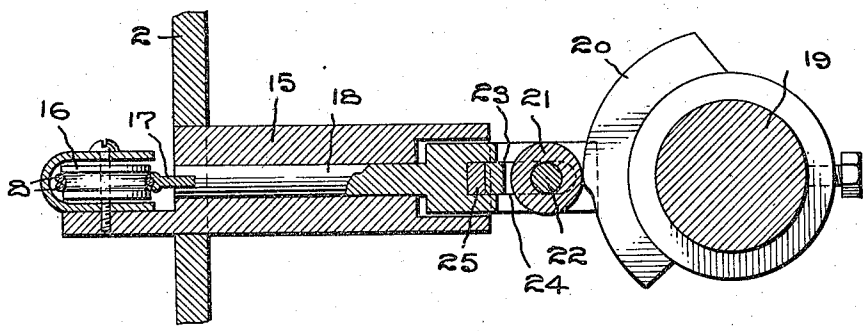


FIG. 5.

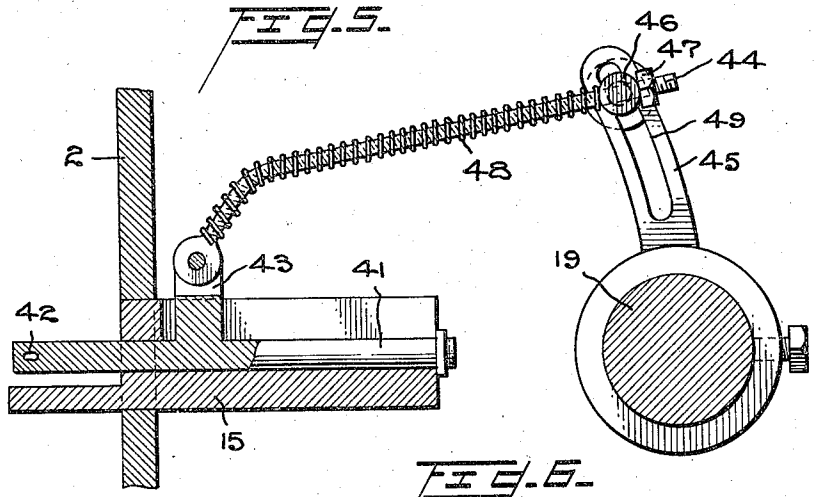
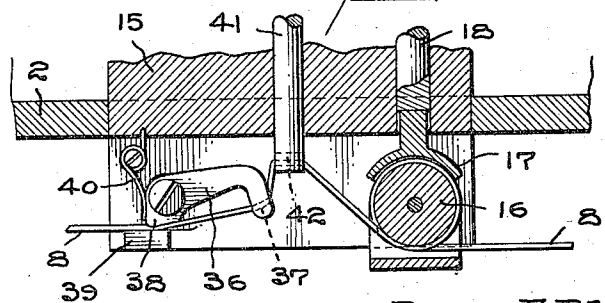


FIG. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

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PULL-OFF MECHANISM FOR SEWING-MACHINES.

1,179,038. Specification of Letters Patent. Patented Apr. 11, 1916.

Application filed August 16, 1915. Serial No. 45,717.

To all whom it may concern:

Be it known that I, BYRON F. RHODES, 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 Pull-Off Mechanisms for Sewing-Machines, of which the following is a specification.

My invention relates to improvments in pull off mechanisms for sewing machines, the object of the invention being to provide a mechanism of the character stated which will pull off an even length of thread at each operation just sufficient to supply the necessary stitch.

A further object is to provide a mechanism of the character stated which is capable of adjustment to regulate the amount of pull off, and which is of extremely simple inexpensive construction, strong and durable in use.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1 is a fragmentary view in front elevation illustrating my improvements. Fig. 2 is a fragmentary view in section on an enlarged scale on the line 2—2 of Fig. 1. Fig. 3 is a fragmentary view in section on the line 3—3 of Fig. 2. Fig. 4 is a view in section on the line 4—4 of Fig. 2. Fig. 5 is a view in section on the line 5—5 of Fig. 2, and Fig. 6 is a fragmentary view similar to the lower portion of Fig. 2, but showing the parts in a different position.

1 represents the base of a sewing machine having an integral overhanging bracket arm 2, with a head 3 at its free end in which a needle bar and pressure bar 5 are mounted. The presser bar 5 has a foot 6 at its lower end, and bar 4 is provided with a needle 7 which moves through the presser foot 6.

A thread 8 is drawn through a tank 9 where it is intended to receive a saturation of wax, and is drawn off an equal distance at each operation by means of a lever 10, carrying a pulley 11, and 12 is a pulley secured to a fixed part of the head 3 under which the thread passes as shown clearly in Fig. 1.

13 is a vertically positioned rocker shaft carrying a thread guiding hook 14 at its lower end.

The particular construction of sewing machine above described forms no part of the present invention, but in fact is the subject matter of an application for patent filed by me February 25, 1915, and given Serial No. 10,511 and the mechanism is here illustrated only for the purpose of illustrating my improvements in connection with an operative machine, although, of course, it is to be understood that the pull off mechanism may be used in connection with other types of machine as desired.

A block 15 is secured to the bracket arm 2, and supports a pulley 16 around which the thread 8 is passed at least one complete turn, and is adapted to be engaged by a brake shoe 17 carried by a rod 18, mounted to reciprocate in the block 15.

19 represents a rocker shaft supported on bracket arm 2, and having a cam 20 fixed thereto. The inner end of the rod 18 is enlarged and bifurcated to receive a roller 21, and the trunnions 22 of the latter are engaged by a bifurcated bearing block 23 which is mounted to slide in slots 24 in the bifurcated members of rod 18.

A wedge 25 is also located in the slots 24 back of the block 23, and the movement of the wedge 25 adjusts the block longitudinally of the rod 18, and thereby adjusts the roller 21, regulating the stroke of the rod by lengthening or shortening the distance between the roller 21 and the brake shoe 17.

The wedge 25 is adjustable by means of a screw 26 which has a smooth portion projecting through an opening 27 in a lug 28 on wedge 25, and the screw-threaded end of the screw 26 is screwed into a threaded opening 29 in rod 18. A nut 30 on the screw 26 operates to limit the movement of the wedge in one direction by means of a coiled spring 31 on the screw between the head of the screw and the lug 28.

33 represents a crank shaft which is supported transversely in the bracket arm 2, and at its inner end is provided with a crank arm 32 projecting through a slot 34 in wedge 25. A crank handle 35 is secured to the forward end of the shaft 33, and by moving this crank handle, the wedge 25 may be moved longitudinally so as to permit the cam 20 to

move roller 21 without operating the brake shoe 17. This release of the brake shoe is desirable when initially positioning the thread, or if the thread breaks and the needle is to be again threaded, or if for any reason a manipulation or repair is desired at any time.

36 represents a pivoted dog which is provided at its longer end with an eye 37, through which the thread 8 is fed. The shorter end of the dog 36 constitutes a shoulder 38 which is adapted to press the thread 8 between the same and a lug 39 on block 15, thereby biting into the thread and securely holding the same against movement when the dog 36 is in one position as shown in Fig. 6. A weak spring 40 is secured to the block 15, and exerts a pressure on the dog just sufficient to return it to normal position as shown in Fig. 2, and allow the release of the thread at the proper time.

Between the dog 36 and the pulley 16, a plunger 41 is located, and is provided with an opening 42 in its outer end through which the thread 8 moves. This plunger 41 is adapted to reciprocate in the block 15, and is provided with a bifurcated bracket 43 pivotally connected by a rod 44 with a rocker arm 45 on rocker shaft 19.

The particular connection above referred to is shown most clearly in Fig. 5, in which it will be noted that one end of the rod 44 is screw-threaded, and projected through a pivot bolt 46, and has a nut 47 on its free end. A coiled spring 48 located around the rod 44 and bearing against the pivot bolt 46 serves to hold the parts in normal position, but permit a certain cushioning to accommodate for varying movements. The pivot bolt 46 is adjustable in a slot 49 and rocker arm 45, and by adjusting the position of the pivot bolt in the slot, the length of movement or stroke of the plunger 41 can be adjusted in order to pull off the desired amount of thread at each operation.

Fig. 2 illustrates the position of the parts after the lever 10 has drawn the thread more or less taut, and during this movement, the brake shoe 17 is gripping the thread on the pulley 16 to hold the latter against movement. Plunger 41 then moves inwardly to the position shown in Fig. 6, and in so doing the thread 8 swings the dog 36 on its pivot, causing the shoulder 38 to clamp the thread between the same and the lug 39. During this inward movement of the plunger 41, the brake shoe 17 is released from pressure against the thread 8 on pulley 16, so that the thread can be drawn from the source of supply through the tank 9 or from any other source.

Before the plunger 41 moves outwardly, the cam 20 operates against roller 21 to move rod 18 and press the shoe 17 tightly against the thread on pulley 16. At the same time, this outward movement of the plunger 41 and the action of spring 40 releases the dog 36, so that pressure on the thread by the dog is released, and the dog moves to the position shown in Fig. 2. The slack thus provided between pulley 16 and dog 36 is just the amount needed for the stitching operation, and is just the amount taken up by the movement of the lever 10.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A pull off mechanism for sewing machines, comprising two thread holding members, a plunger between the members engaging the thread, means for mechanically operating one of said members to grip the thread, and the other of said members operated by the movement of the thread by the plunger to grip the thread, substantially as described.

2. A pull off mechanism for sewing machines, comprising two thread holding members, a plunger between the members engaging the thread, means for mechanically operating one of said members to grip the thread, and the other of said members operated by the movement of the thread by the plunger to grip the thread, said last-mentioned member comprising a pivoted dog having an eye therein for the passage of the thread, substantially as described.

3. In a pull off mechanism for sewing machines, the combination with a thread-receiving pulley, of a thread engaging member spaced from the pulley, a brake shoe engaging the thread on the pulley, a plunger having a thread-receiving opening therein, said plunger located between the pulley and the thread engaging member, the latter operated by the movement of the thread by the plunger to grip and release the thread, substantially as described.

4. In a pull off mechanism for sewing machines, the combination with a thread-receiving pulley, of a thread engaging member spaced from the pulley, a brake shoe engaging the thread on the pulley, a plunger having a thread-receiving opening therein, said plunger located between the pulley and the thread engaging member, the latter operated by the movement of the thread by the plunger to grip and release the thread, and means for releasing the brake shoe from engagement with the thread during the movement of the plunger in one direction, substantially as described.

5. In a pull off mechanism for sewing machines, the combination with a thread-receiving pulley, and a thread clamp movable toward and away from the pulley, of a pivoted thread engaging dog spaced from the pulley and having a thread-receiving eye therein, and a thread-receiving plunger movable between the pulley and the dog and

causing the operation of the dog by the movement of the plunger, substantially as described.

6. In a pull off mechanism for sewing machines, the combination with a thread-receiving pulley, of a pivoted thread engaging dog spaced from the pulley and having a thread-receiving eye therein, a brake shoe engaging the thread on the pulley, and a reciprocating plunger between the dog and the pulley, said plunger having an opening therein through which the thread moves, and said plunger adapted to move the dog to clamp and release the thread, substantially as described.

7. In a pull off mechanism for sewing machines, the combination with a thread-receiving pulley, and a brake shoe adapted to engage the thread on the pulley, of a dog pivotally supported between its ends, said dog having an eye at its longer end through which the thread is projected, and at its shorter end adapted to clamp the thread against a fixed part, a reciprocating plunger located between the pulley and the dog and having an opening therein for the thread, the movement of the plunger causing the operation of the dog to clamp and release the thread, and means for operating the brake shoe and the plunger, substantially as described.

8. In a pull off mechanism for sewing machines, the combination with a thread-receiving pulley, and a plunger adjacent the pulley constructed to draw the thread from the pulley, of a rod having a brake shoe at one end engaging the thread on the pulley, a roller movably supported at the end of the rod, a cam engaging the roller, a bearing block operatively engaging the roller and holding it against the cam, said block movably mounted on the rod, a wedge bar carried by the rod and positioning the block, means for adjusting the position of the wedge, and means for quickly moving the wedge out of and into operative position, substantially as described.

9. A pull off mechanism for sewing machines, comprising a thread-receiving pulley, a thread engaging member spaced from the pulley, a brake shoe engaging the thread on the pulley, means for releasing the brake shoe, a reciprocating plunger between the pulley and the thread holding member, and having an opening therein for the passage of the thread, a rocker shaft having a slotted crank arm thereon, a rod adjustably connected at one end to the slotted crank arm, and at its other end to the plunger, and cushioning means on the rod cushioning the movement of the rocker arm relative thereto, substantially as described.

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

BYRON F. RHODES.

Witnesses:
CHAS. E. POTTS,
MARIE JACKSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."