

No. 619,250.

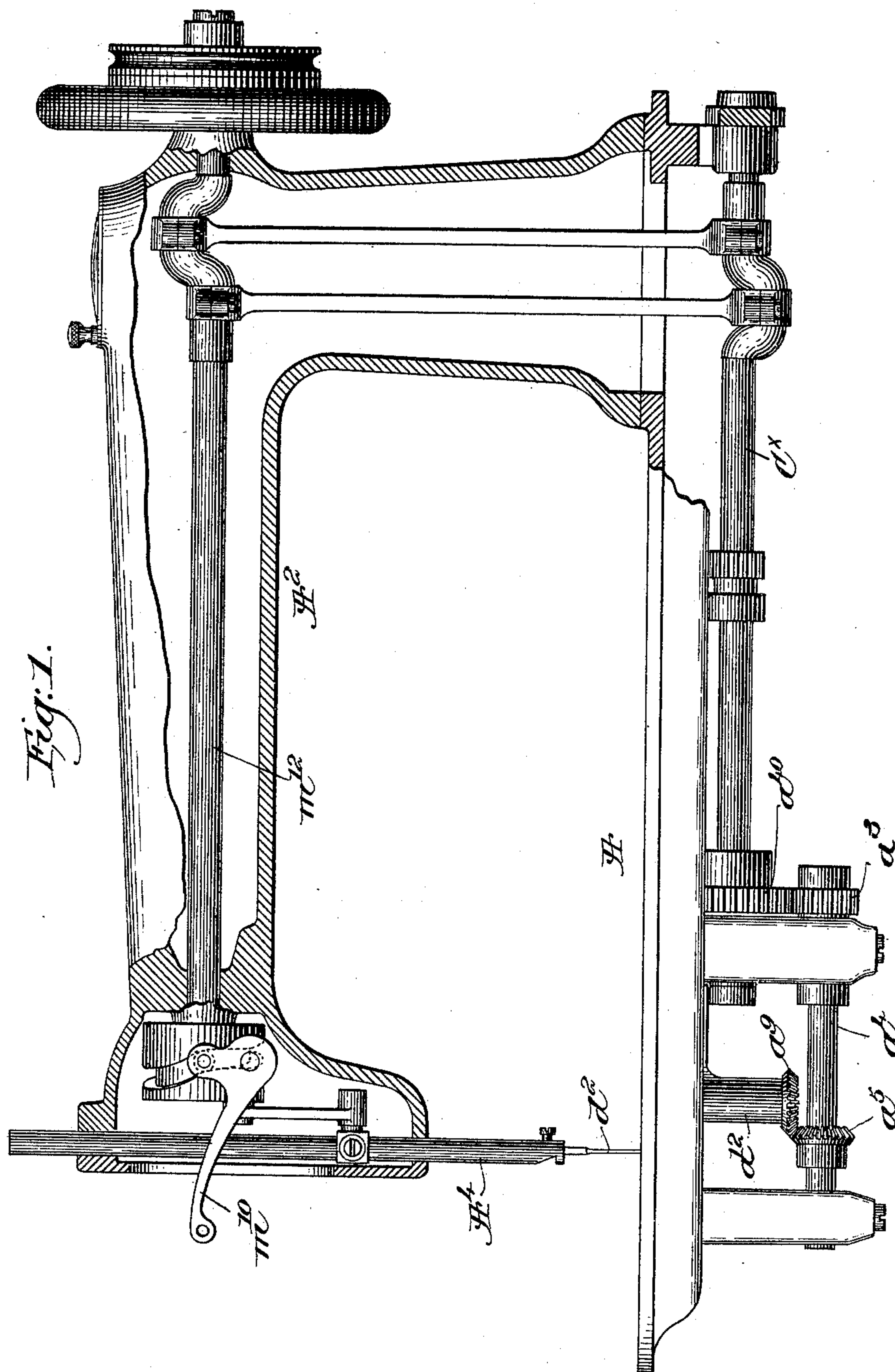
Patented Feb. 7, 1899.

W. F. DIAL & G. H. DIMOND.  
SEWING MACHINE.

(No Model.)

Application filed Feb. 4, 1898.)

2 Sheets—Sheet 1.



Witnesses.  
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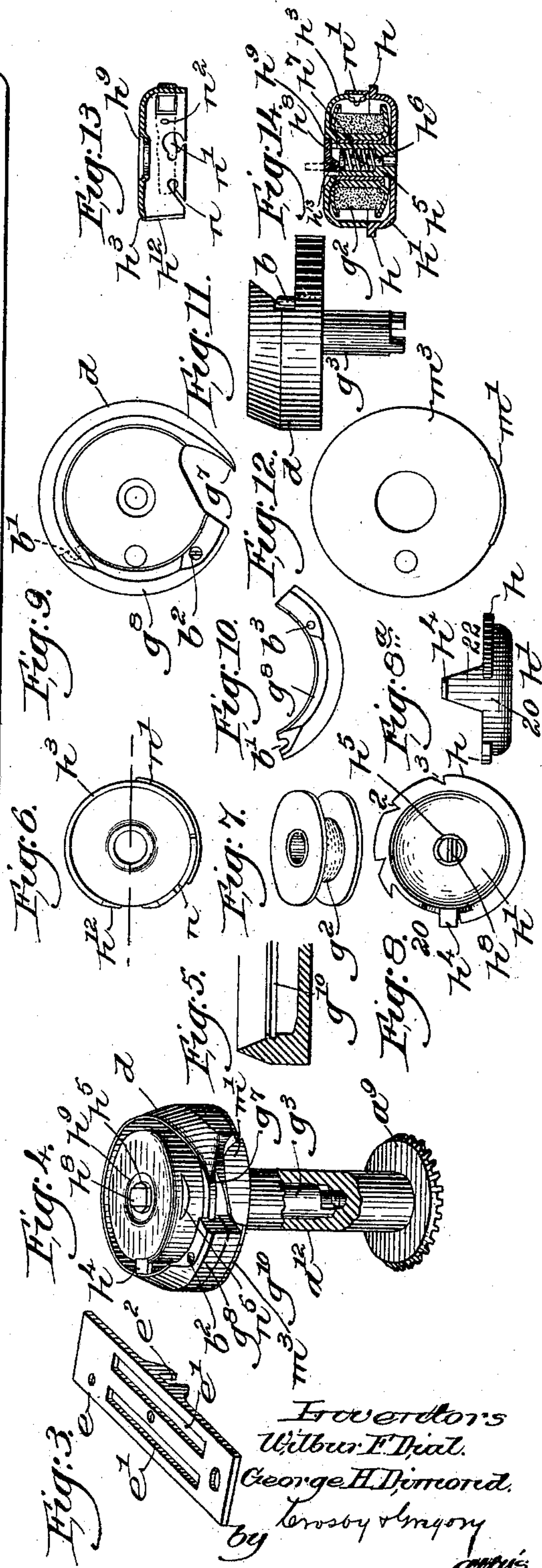
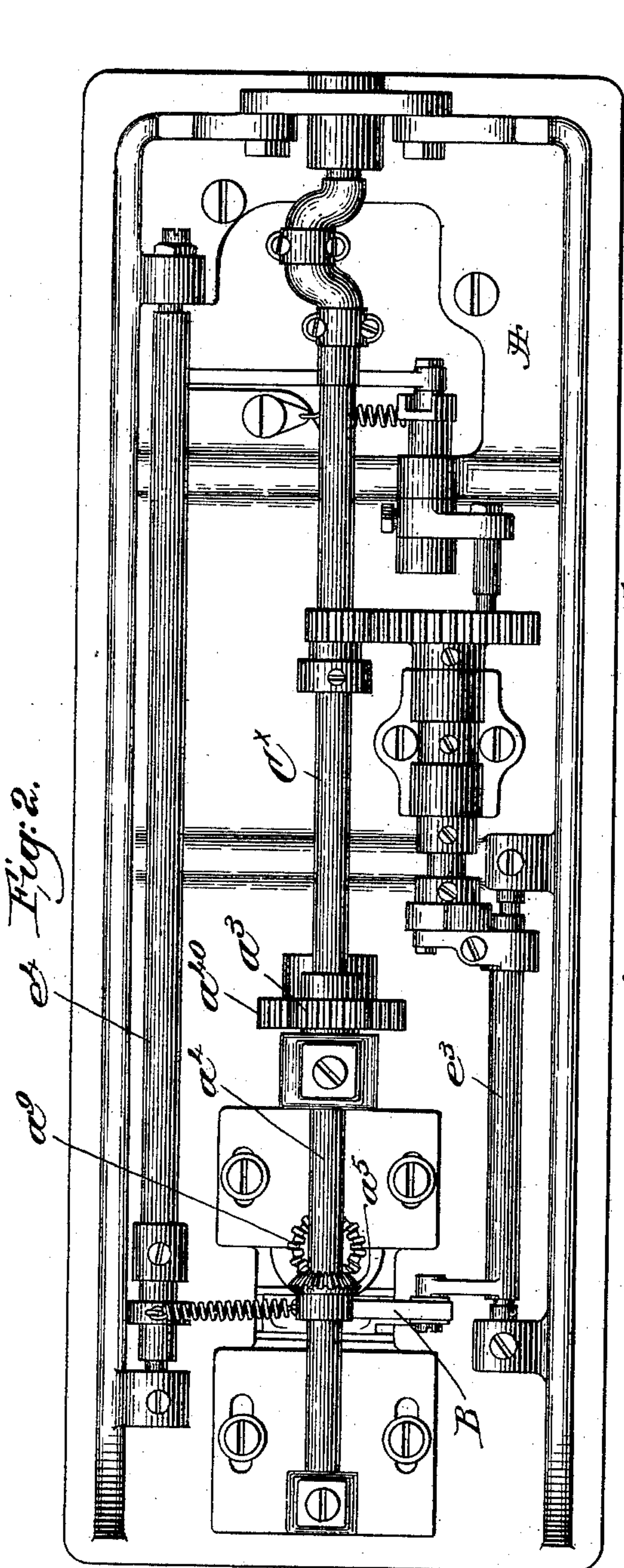
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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

WILBUR F. DIAL AND GEORGE H. DIMOND, OF BRIDGEPORT, CONNECTICUT,  
ASSIGNORS TO THE WHEELER & WILSON MANUFACTURING COMPANY,  
OF SAME PLACE.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 619,250, dated February 7, 1899.

Application filed February 4, 1898. Serial No. 669,040. (No model.)

*To all whom it may concern:*

Be it known that we, WILBUR F. DIAL and GEORGE H. DIMOND, of Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

10 This invention is intended as an improvement on the machine shown and described in United States Patent No. 578,136, dated March 2, 1897, and the improvements apply, chiefly, to the circularly-moving hook and its  
15 thread-case.

In this present invention the interior of the circularly-moving hook is provided with an annular groove which receives loosely the flange of a two-part thread-case composed of a shallow  
20 cup having a flange to enter the groove of the hook, said flange being notched and also being provided with a pocket, said cup having also rising from it at the face of its outer edge a projection provided with a horizontally-extended lug which enters loosely a notch of a  
25 holding device or bridge fixed with relation to the throat-plate of the machine, said lug restraining the rotation of the cup with the hook. This cup has extended outwardly from  
30 it a central post to receive a cop or bobbin or other usual mass of wound thread, the lower end of the thread mass entering the cup and resting on its bottom. The other cooperating part of the thread-case is a cup-shaped cover  
35 which surrounds said post and is provided with suitable thread-guiding eyes and a tension device consisting of a spring made adjustable in any usual or suitable manner, the inner edge of the circular wall of said cover  
40 terminating at the face of the outer edge of said cup. This cover has a notch in its side wall to embrace the projection referred to as rising from the restrained cup, and consequently the cover does not rotate. The  
45 pocket in the flange of the cup is to receive one-half of the loop of needle-thread in its passage about the thread-case and its contained bobbin, said flange and pocket operating as provided for in the patent referred  
50 to. The thread-case in said patent carries the tension device, and it also has a lip to ex-

tend over and somewhat overlap the top of the bobbin, the lip preventing the loop of needle-thread from engaging or catching under the head of the bobbin; but herein the closed  
55 top of the cover prevents any liability of the loop of needle-thread engaging the head of the bobbin. By separating the thread-case of the said patent in a line above its notched flange and by modifying the shape of the upper  
60 part of the thread-case and making it as a cover closed at its top we gain better results in sewing and there is no possibility of the bobbin-thread escaping or being thrown out of or off into the form of a coil to be taken  
65 up by or in the loop of needle-thread, which would cause bad work. The post has a cover-holding device, herein shown as a latch, which in its closed or operative position enters a depression in the top of the cover, the  
70 holding device lying in said depression being protected so that the loop of needle-thread cannot catch under it.

Figure 1 of the drawings represents in elevation and partial section a portion of a  
75 Wheeler & Wilson sewing-machine to which our invention has been applied. Fig. 2 is an under side view of said machine. Fig. 3 is an enlarged detail showing the throat-plate. Fig. 4 is an enlarged perspective view of the  
80 hook and its shaft, the latter being broken out. Fig. 5 is a detail showing the groove at the interior of the hook. Fig. 6 is a top view of the cover and its attached tension-spring device. Fig. 7 is a perspective view of the  
85 form of bobbin illustrated in this present instance of our invention. Fig. 8 is an interior or plan view of the cup part of the thread-case with its post and the holder turned up. Fig. 8<sup>a</sup> is a perspective view of the cup part  
90 of the two-part thread-case. Fig. 9 shows the hook alone with its entire operative side wall in position. Fig. 10 shows part of the side wall removed, as it will be in order to apply the lower or cup-shaped part of the thread-  
95 case to it. Fig. 11 shows the hook, looking at it in side view, with part of the wall removed. Fig. 12 is a top or plan view of the needle-guard detached. Fig. 13 is a section taken through the cover detached. Fig. 14  
100 is a section in the line  $x'$  of Fig. 8.

The bed-plate A, the overhanging arm A<sup>2</sup>,



the needle-bar  $A^4$ , the needle  $d^2$ , the stem or hook shaft  $a^{12}$ , having the attached bevel-gear  $a^9$ , and the hook  $d$ , having the point  $g^7$  and detachable heel or wall section  $g^8$ , the interior wall of said hook being grooved, as at  $g^{10}$ , and the needle-guard composed of a plate  $m^3$ , having a lip  $m'$  to act against the needle, the lower shaft  $a^4$ , having a bevel-gear  $a^5$  to engage the bevel-gear  $a^9$ , the shaft  $C^x$ , having a suitable gear  $a^{40}$  to engage a gear  $a^3$  on and rotate the shaft  $a^4$ , and the throat-plate  $e$ , having the notch  $e^2$  in an ear depending from one edge of said plate, and the take-up  $m^{10}$ , actuated by a cam on the main rotating shaft  $m^{12}$ , which by two links engages the double cranks of and rotates the shaft  $C^x$ , are and may be all substantially as represented in said patent, where they are designated by like letters and numerals, with the exception that herein the main shaft has been lettered  $m^{12}$  and with the exception of a slight variation in the construction of the hook to be described, and herein the parts referred to will in practice be operated as therein provided for, and so, also, the feed-bar  $B$ , it having suitable serrated feed-points to rise and fall in the slots  $e'$  of the throat-plate, will and may be actuated and have four motions imparted to it by the shafts  $e^3$  and  $e^4$ , common to the usual Wheeler & Wilson machine shown in United States Patent No. 605,700, dated June 14, 1898.

The hook  $d$  in this present instance of our invention has been provided with a pin  $b$  which stands in a portion of the hook, as best illustrated in Fig. 11, and the removable wall part  $g^8$  of the hook has a notch  $b'$ , (see Fig. 10,) which when said removable part is put into operative position, to confine the cup of the thread-case, to be described, in operative position, fits over the pin  $b$ , a screw  $b^2$  being extended through the heel end of said wall in a hole  $b^3$ .

In the patent referred to the part  $g^8$  was confined in working position by means of two screws inserted from the under side of the hook upwardly into the lower side of said part  $g^8$ ; but by making the notch  $b'$  and adding the pin it is possible to attach and detach the part  $g^8$  by simply removing one screw, and the head of the screw is left readily accessible for the screw-driver of the operator by simply withdrawing partially one of the usual sliding covers of the machine.

The short pin or stud  $g^3$ , connected with the hook, enters a recess in the shaft  $a^{12}$ , as in the patent first referred to.

As hereinbefore stated, the thread-case herein to be described consists, essentially, of a cup  $h'$ , having a flange  $h$  about its upper edge, said flange being substantially such as shown in the patent first referred to, said flange having suitable notches, as 2 and 3, and a pocket 20 left by cutting out a part of said flange.

In the patent referred to the thread-case had a vertical notched wall extended above the flange  $h$ , but herein said wall has been

entirely dispensed with, and instead of it and of the lip or finger for overlapping the top of the bobbin  $g^2$  we employ a cover  $h^3$ , which rests in operation on the top of the flange  $h$ . The cup  $h'$  has rising from it (see Fig. 8<sup>a</sup>) a projection 22, having a horizontally-extended lug  $h^4$ , which in practice enters the notch  $e^2$ , in this instance of our invention formed in a lip connected with the throat-plate  $e$ , so that said cup when it is put into the hook with its flange  $h$  in the groove  $g^{10}$  the said cup is restrained from rotation with the hook. The cup has rising from its center a post  $h^5$ , in this instance of our invention shown as bored to receive the shank of a pin  $h^6$ , said shank being surrounded under the head of said pin by a suitable spiral or other spring  $h^7$ . This post  $h^5$  receives over it the usual bobbin or under thread mass  $g^2$ , and the upper end of the post after the bobbin or thread mass has been applied to it receives and acts as a center of support for the cover  $h^3$ .

When the cover is being applied, the holder  $h^8$ , connected with the upper end of the said post, stands in vertical position, as represented by dotted lines, Fig. 14, and the cover having been put in place the holder is turned down into the full-line position, Figs. 4 and 14, the end of the holder entering a notch or countersink  $h^9$  in the top of the cover, the head of the spring-pressed pin  $h^6$  acting upon a part of said holder to normally keep it closed. The cover has suitable slotted eyes  $n$ , into which the thread is led, so that it may be acted upon by the tension-spring  $n'$ , made adjustable in any usual manner by a suitable screw  $n^2$ , so as to vary the extent of pressure of said spring on the thread being led from the bobbin or under thread mass.

We have herein shown a metallic bobbin with the thread wound on it; but it is understood that this thread mass may be of any usual form—as, for instance, a cop wound into cylindrical form, a form substantially such as represented in Fig. 14 by the thread. The cover  $h^3$  has at one side a notch  $h^{12}$ , (see Fig. 13,) which fits the lip  $h^4$ , rising from the cup  $h'$ , so that said cover is restrained from rotation.

The holding device at the top of the post is an essential feature of our invention, for it prevents the cover, separated from the cup, from rising as the wall of the moving hook in its rotation acts against the thread extended from the tension device of the cover to the work, said wall at such time acting on the bobbin-thread to draw from the bobbin enough thread to be used in the stitch next to be made.

It is frequently necessary to supply the machine with under or second thread, and to do this and avoid the necessity of engaging the holder to lift the same preparatory to removing the cover from the post when the holding device is in the form of a pivoted latch, as herein shown, we may provide the circular wall of the cover with a notch  $n^5$ , in which



may be placed the thumb-nail of the operator or some other instrument, as a screw-driver, by which to lift that side of the cover, and by lifting said cover strongly the holding device  
 5 will be started about its center or pivot  $h^{13}$ , so that the cover will slip off from the post over said holding device, and the cover being removed the holder may be readily engaged and turned into its vertical inoperative position.  
 10

In this our invention the cup and cover inclosing the cop or bobbin are stationary and no part of the thread-case rotates with the hook, and the cop or bobbin within the thread-  
 15 case is wholly surrounded and protected by the cover, so that its thread cannot possibly be exposed to interfere in any degree whatever with the rotation of the hook.

By separating the thread-case into two  
 20 parts and making one of the parts as a cover and providing the cover or its circular wall with a tension-spring the threading up of the under thread preparatory to stitching is made very simple and may be easily and read-  
 25 ily done while the cover is held in the hand and while the cop or bobbin is in the cover, and the thread having been properly introduced or led through the holes in the cover and under the tension-spring the cop or bob-  
 30 bin and cover may be placed upon the stationary post in the cup part of the bobbin, the holding device being then turned up in its inoperative position, and the said holding device may be then turned down, retaining  
 35 the cover in its operative position.

In the construction of the parts as herein provided for it will be remembered that when a new supply of thread is introduced said  
 40 thread in order to subject it to the proper tension is threaded through only the cover, which at such time is out of the machine and in the hands of the operator, and it is this facility of threading the cover in the hand of  
 45 the operator and the quick and ready application of the threaded cover containing the cop or bobbin into operative position that greatly simplifies the operation of the machine and saves the time of the operator.

It will be understood for the correct oper-  
 50 ation of the parts in sewing that the tension device must always occupy the same position with relation to the path in which the needle reciprocates in sewing. We are aware that a thread-case has been made of two cups or  
 55 hollow portions of substantially the same depth, one fitted within the other, one overlapping the other, and both fitted within the circular wall of a shuttle, and such construction we do not claim.

60 Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a sewing-machine, the following instrumentalities, viz: a hook, a thread-case  
 65 composed of two parts, one part consisting of a shallow cup having at its outer edge a radial flange to enter a groove in said hook, and

having a post extended centrally therefrom, said post projecting beyond the flanged edge  
 70 of said cup, the other part of said thread-case consisting of a cup-shaped cover fitted to said post and provided with a tension device, the inner edge of said cover terminating  
 75 at the outer flanged edge of said cup, means to restrain the independent rotation of the cover on or with relation to the cup, means to restrain the rotation of both the cover and  
 80 cup while the hook is in operation, and means to keep the said cover and cup operatively together to retain the under thread in the thread-case, the cover being removable from  
 85 the post of the cup, while the latter remains in its operative position in the hook, to thereby provide for renewing the under thread in the thread-case, substantially as described.

2. In a sewing-machine, a thread-case composed of two parts, one part being a shallow  
 90 cup having a central post and having extended from its edge a projection provided with a horizontally-extended lug, the other part being a cup-shaped cover fitted to said  
 95 post and provided with a tension device, the inner edge of said cover next the outer edge of said cup being notched to receive the projection of the cup to thereby restrain the movement of one of said parts relatively on  
 100 the other of said parts, the lug of said projection cooperating with a suitable notch of a plate to restrain the rotation of the thread-case during the operation of sewing, sub-  
 105 stantially as described.

3. In a sewing-machine, a thread-case composed of two parts, one part being made as a  
 110 shallow cup having a post extended centrally from it, said cup having at its outer edge a horizontally-extended flange provided with notches and a pocket, the other of said parts being a cup-shaped cover provided with a  
 115 tension device and surrounding the post extended from the said cover, the inner edge of the cover terminating substantially at the outer edge of the cup, means to restrain the rotation of one of said parts on or with relation to the other, and means to retain the  
 120 said cover and cup operatively together, substantially as described.

4. In a sewing-machine, the following instrumentalities, viz: a circularly-moving  
 125 hook grooved internally, a cup located inside said hook and terminating at its outer edge with a flange to enter the groove of said hook, said flange having a pocket, said cup also  
 130 having a post extended from its center and provided at its edge with a projection having a horizontally-extended lug, means to engage said lug and restrain the rotation of said cup with said hook, an independent separable  
 135 cover having a tension device and fitted over said post, means to restrain the rotation of said cover on said post, the inner end of said cover terminating at the outer edge of the cup, and means to retain the cover on the  
 140 post with its edge close to the end of the cup, substantially as described.



5. The hook provided with a fixed pin *b*, combined with the removable part of the wall of the hook, said removable part having a notch to fit over said pin, and a screw inserted from the upper side of said removable part into the main part of said hook to confine said removable part in its operative position, substantially as described.

6. In a sewing-machine, a thread-case composed of a cup having at its open end a radially-extended flange and having a central hollow post, a holding device pivoted on said post and having a projecting end, and a concavo-convex cover applied to said post, said cover having at its outer end surrounding said post a countersink to receive all of said holding device when the latter is in its closed position to retain the cover on said post, a spring located in said post and serving to retain the said holding device in its closed as well as in its open position, the face of said thread-case being left entirely free from any outward bulges or projections, to thereby enable the thread to slip readily over the thread-case without any detention whatever, substantially as described.

7. In a sewing-machine, a thread-case composed of a cup having at its open end a ra-

dially-extended flange, and having a central hollow post, a holding device pivoted on said post and having a projecting end, and a concavo-convex cover applied to said post, said cover having at its outer end surrounding said post a countersink, to receive all of said holding device when the latter is in its closed position to retain the cover on said post, a spring located in said post and serving to retain the said holding device in its closed as well as in its open position, the face of said thread-case being left entirely free from any outward bulges or projections, to thereby enable the thread to slip readily over the thread-case without any detention whatever, said cover having a notch *n*<sup>5</sup> located at its edge farthest from the projecting end of the holding device when the latter is in its closed position, and a tension device carried by said cover, to operate all substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILBUR F. DIAL.  
GEORGE H. DIMOND.

Witnesses:

ISAAC HOLDEN,  
GEO. CORNWELL.