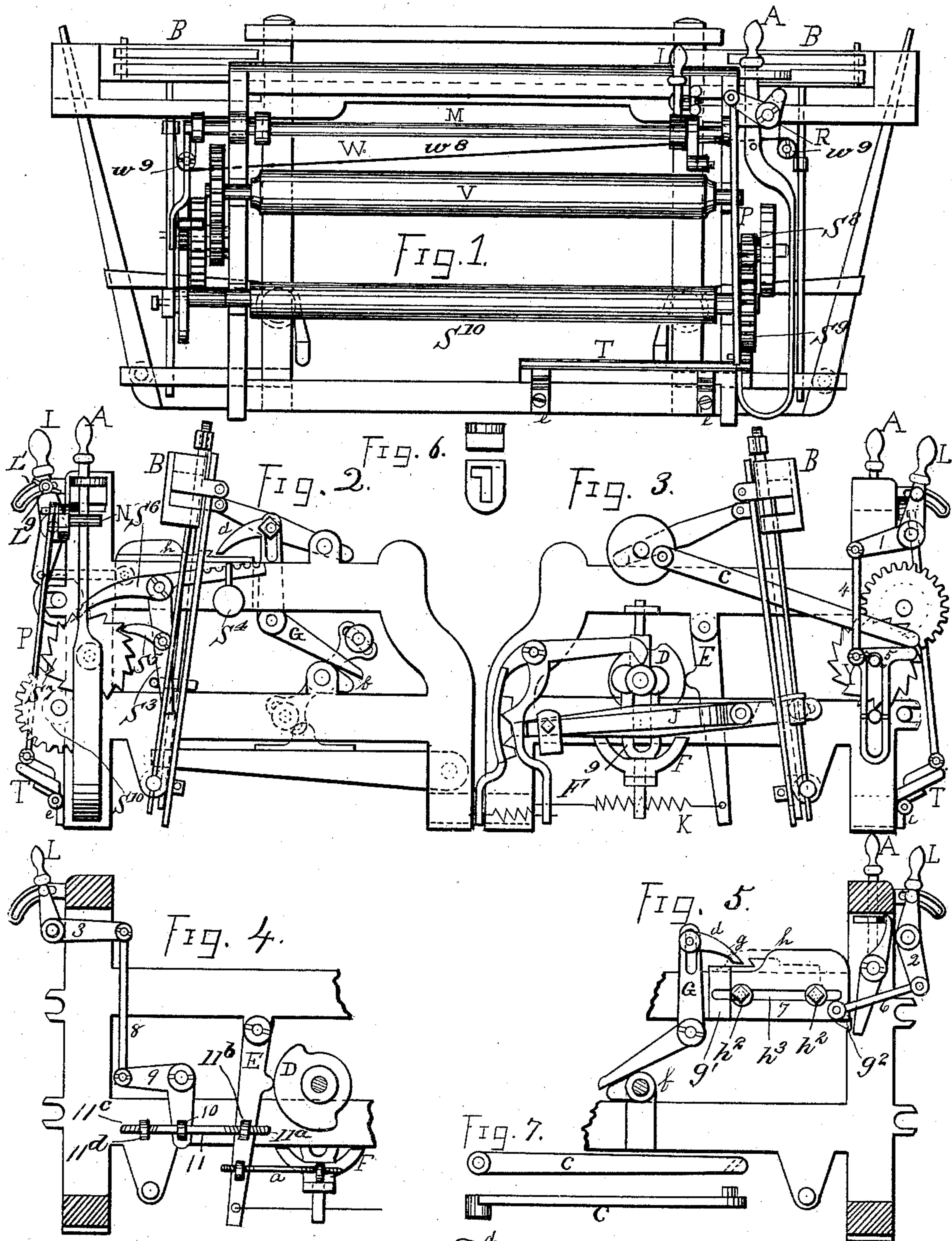


(No Model.)

T. BROMLEY, Jr.
POWER LOOM, &c.

No. 418,349.

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WITNESSES. Fig. 8.
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POWER-LOOM, &c.

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To all whom it may concern:

Be it known that I, THOMAS BROMLEY, Jr., a citizen of the United States, residing in the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Power-Looms for Weaving Smyrna Carpets and Rugs, of which the following is a specification.

My invention belongs to looms for weaving by power a class of fabrics known as "Smyrnas," which fabrics are woven with two wefts, "shot-about," one weft being a coarse cheap material, generally of jute, the other of "twisted chenille." The chenille is generally party-colored, and when "set" makes a figure on both sides of the fabric which is reversible, one side being a fac-simile of the other.

My invention consists in, first, a loom provided with a two-shuttle box on each side of the loom and a mechanism to operate them pick and pick, in combination with a stop mechanism that will stop the loom every two shots of weft; second, in combination with a mechanism that will stop the loom every two shots, a mechanism by which the loom may be started by the foot; third, a device by which the take-up may be changed and the box-motion and stop-motion thrown out of action when weaving headings on rugs. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front view of such parts of a power-loom as are required to show my improvements. Figs. 2 and 3 are end views. Figs. 4 and 5 are sectional end views; and Figs. 6, 7, and 8 are views of parts detached from the loom.

Similar letters refer to similar parts throughout the several views.

The construction of my improved loom is as follows: The drawings show and represent a shuttle-box motion that is well known in the arts as the "anchor" shuttle-box motion.

B are the shuttle-boxes. These boxes I prefer to be constructed with the "swells" on the front of the box, as is customary on the Crompton and Knowles looms.

The boxes B are connected by a connection W, Fig. 1, which connection is made of a rod w^8 and short chains at each end, where it passes over pulleys w^9 . The connection W is so connected to the lifting-rods that both boxes will rise and drop at the same time. The boxes are raised and dropped by the oscillating lever J, which is operated by the double-acting lifting-pawl F, known as the "anchor," which anchor swings on the lower end of a yoke F^9 . The anchor is usually controlled by a pattern-chain; but with my improvement it is controlled by a stepped cam D, (plainly shown in Fig. 4,) which acts on lever E, which is connected to the anchor by rod a . The cam D makes one revolution in two picks and changes the shuttle-boxes every shot.

Fig. 5 shows the stop-motion, which is constructed and operated the same as a two-shot weft stop-motion, and consists of the usual cam b , (which cam is placed on the lower or "cam shaft,") a lever G, a pawl d , slide g' , and trigger g^2 , all shown in Fig. 5, and which parts are old and well known to weavers. The action of this stop-motion is not controlled by the weft, but it is made to stop the loom every two shots. The pawl d is made with a shoulder g .

T is a treadle fastened to the lower front rail of the loom by hinges $e e$, and is connected by rod P to a bell-crank lever R. (See Fig. 1.) In one arm of this lever is a stud N. (See Fig. 2.) This stud N, when the treadle T is operated by the foot, presses against the handle A and starts the loom in the same manner as if the handle A were operated by the hand.

A is the starting-handle, which handle is connected to and operates the belt-shifter in the usual manner in starting and stopping the loom.

The loom is provided with two take-ups, one of which is positive and the other conditional. The take-up shown in Fig. 3 is positive. It is operated by the pawl C, which is operated from the crank-shaft, and may be set to take two or more teeth of the ratchet-wheel Y every revolution of the crank-shaft,

or for each shot of weft. This take-up operates the feed or take-up roller V, which should be spiked, and which roller V is driven, in the usual manner, by a pinion fixed to the hub of the ratchet-wheel Y. (Shown in Figs. 1 and 2.) The take-up shown in Fig. 2 is operated from one of the lay-swords and takes up what the positive roller V gives off. This conditional take-up consists of a right-angled lever S³, weight S⁴, pawl S⁵, retaining-catch S⁶, ratchet-wheel S⁷, pinion S⁸, spur-wheel S⁹, and roller S¹⁰, all of which are shown in Figs. 1 and 2. This above-described take-up and all its parts are old and well known to weavers. No claim is made to it as being new, and any other conditional take-up may be substituted for the one shown in Figs. 1 and 2, and this is obvious to one skilled in the art of weaving.

Fig. 1 shows a rod M, which is mounted in stands on the front of the loom-frame. Fixed on this rod is an arm and handle L, and on the same rod are fixed the arms 1, 2, and 3. The arm 1, Fig. 3, is connected by rod 4 to a yoke 5. This yoke is formed with one long slot. It is mounted on the stud upon which the ratchet-wheel Y is hung and on another stud fixed to the loom-frame, which is in direct line below the wheel-stud, as shown in Fig. 5. The arm 2, Fig. 5, is connected by rod 6 to slide 7, which slide is constructed as shown in Fig. 5, and has an incline *h*. The slide is mounted on two tap-screws *h*², passing through a slot *h*³ and screwed in the loom-side, upon which screws it is made to slide freely. The arm 3, Fig. 4, is connected by rod 8 to bell-crank lever 9, to the lower end of which lever is attached a loop 10. Through this loop freely passes the rod 11, which has a screw-thread on each end. The right-hand end 11^a is screwed in a swiveled nut 11^b, that is connected to lever E. On the left-hand end 11^c is a nut 11^d. At the lower part of lever E is a rod *a*, having a screw-thread on each end, which rod connects the lever E to anchor F. The bottom of lever E is connected to the frame by a spiral spring K. (See Fig. 3.)

The operation of my improved loom is as follows: As before stated, my invention belongs to looms for weaving by power a class of fabrics made by two wefts that are thrown shot-about, one weft being of jute, the other a twisted chenille. In arranging the wefts in the boxes I prefer to work the chenilleweft from the top box and the jute from the bottom box, by which arrangement of the wefts I can make a much evenner and better selvage. Jute is the first shot thrown, which is beaten up by the lay. The boxes then drop and the chenille-weft is thrown. The cam *b* is set so as to stop the loom before the heddles change or the lay moves to the cloth-line, which permits the weaver to "set" the chenille. The weaver then places the foot on the treadle T and starts the loom, throws a shot of jute

and a shot of chenille, when the loom stops for another set, as before described, and the loom so continues to stop every two shots until a rug is woven, when it will be desirable to weave a heading. The heading is woven with weft finer than and different to the weft in the body of the rug, and it is desirable to run the loom continuously without change of shuttles and with a change of take-up, as the number of picks in the headings is usually double that in the body of the rug, I will suppose the body has eleven picks per inch, the heading will have twenty-two picks. The positive take-up is arranged so as to require the pawl C to take for each pick two teeth of the wheel Y, and when weaving the headings to take only one tooth. After having woven the full length of the body of a rug the shuttle containing the jute is removed and a shuttle containing weft for the headings is put in the lower box. The handle L is turned down and fastened by a small bolt and wing-nut L⁹, working in a slotted bracket L'. This shifting of handle L will move the arms 1, 2, and 3, and by means of their connections shift the slide 7, raise the yoke 5, shift the loop 10 against the nut on rod 11, and when the loom is started the pawl *d* as it moves forward will, by reason of the shoulder *g* coming against the incline *h* on slide 7, be raised over the stop-catch, and the stop-motion will not act while the slide 7 is in position shown by the dotted lines in Fig. 5. The bell-crank lever 9 will hold the lever E in the position in which it is put by cam D to make the anchor shift the bottom box so as to work the shuttle in that box, and the boxes will not be changed so long as lever E is held back by loop 10. The yoke 5 will be raised by arm 1, so that the pawl C, on the return-pull, rests on the yoke 5 and only drops so far as to take but one tooth of the wheel Y for each shot of weft while weaving the headings, and the loom will continue to weave with one shuttle and a changed take-up until the heading is woven for the rug already made and a heading for the beginning of the next rug to be woven, when the handle L is put in position shown in the drawings, and the loom will throw a shot of jute and one of chenille and stop for a set, as before described.

Having above described my improvements, I do not claim or confine my invention to the form of a shuttle-box or stop-motions shown; but

As my invention I claim in a power-loom for weaving Smyrna carpets, rugs, and such-like fabrics—

1. A power-loom provided with a double shuttle-box on each side thereof, mechanism for operating said boxes pick and pick, and a mechanism which stops the loom after every two picks, as described.

2. The combination, with a mechanism which stops the loom after every two shots of weft, of a mechanism by which the loom

may be started by foot, as shown, described, and for the purpose specified.

3. The combination of arm 2, rod 6, slide 7, having the incline *h*, with pawl *d*, having a shoulder *g*, as shown, described, and for the purpose specified.

4. The combination of arm 3, rod 8, bell-

crank lever 9, loop 10, rod 11, and lever E, as shown, described, and for the purpose specified.

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Witnesses:

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