

2 Sheets—Sheet 1.

# KNOCK-OFF MECHANISM FOR KNITTING MACHINES.

Patented June 8, 1897.



INVENTOR:

John Bradley  
By Wright Brown & Lively  
Attys

(No Model.)

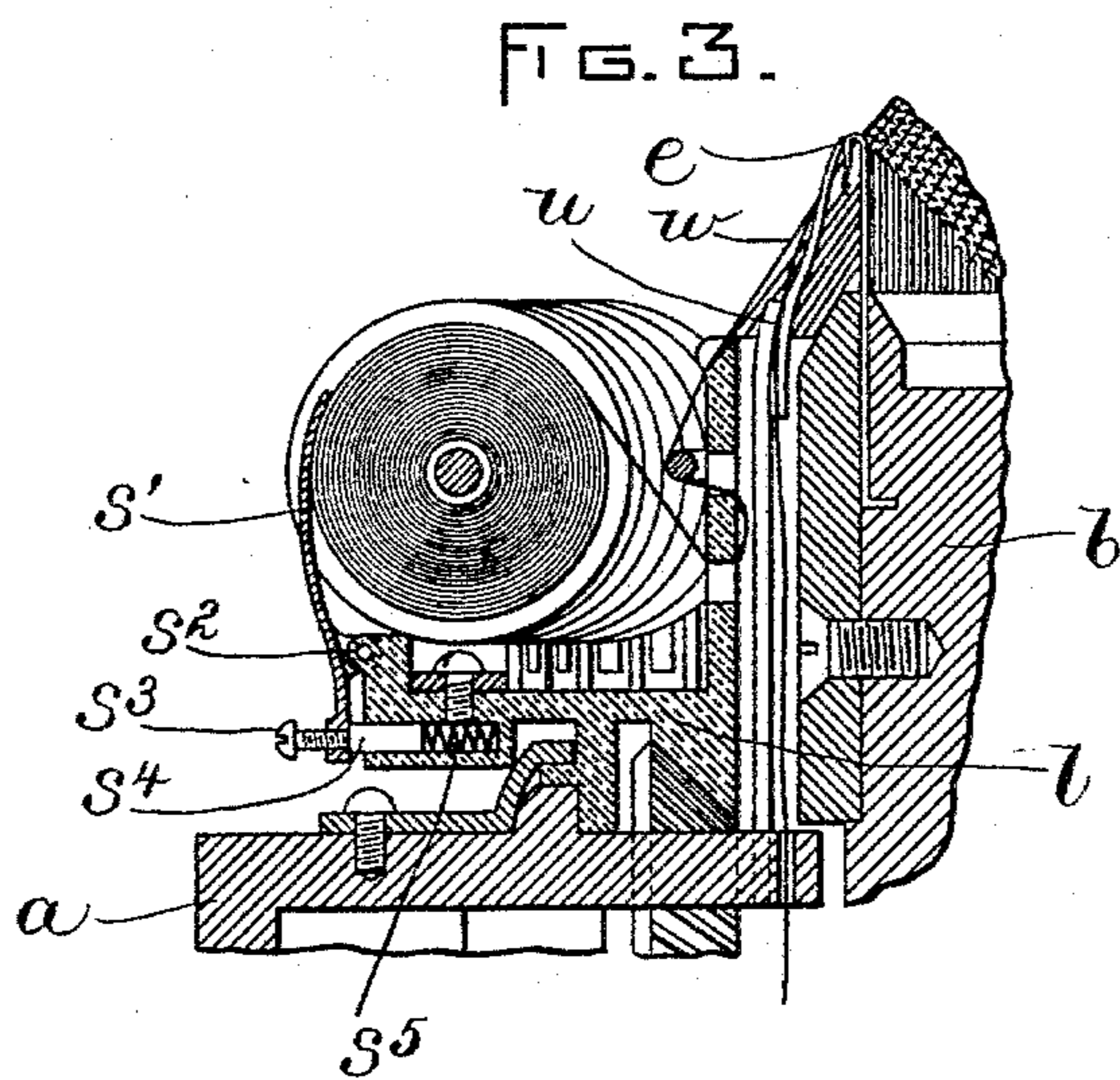
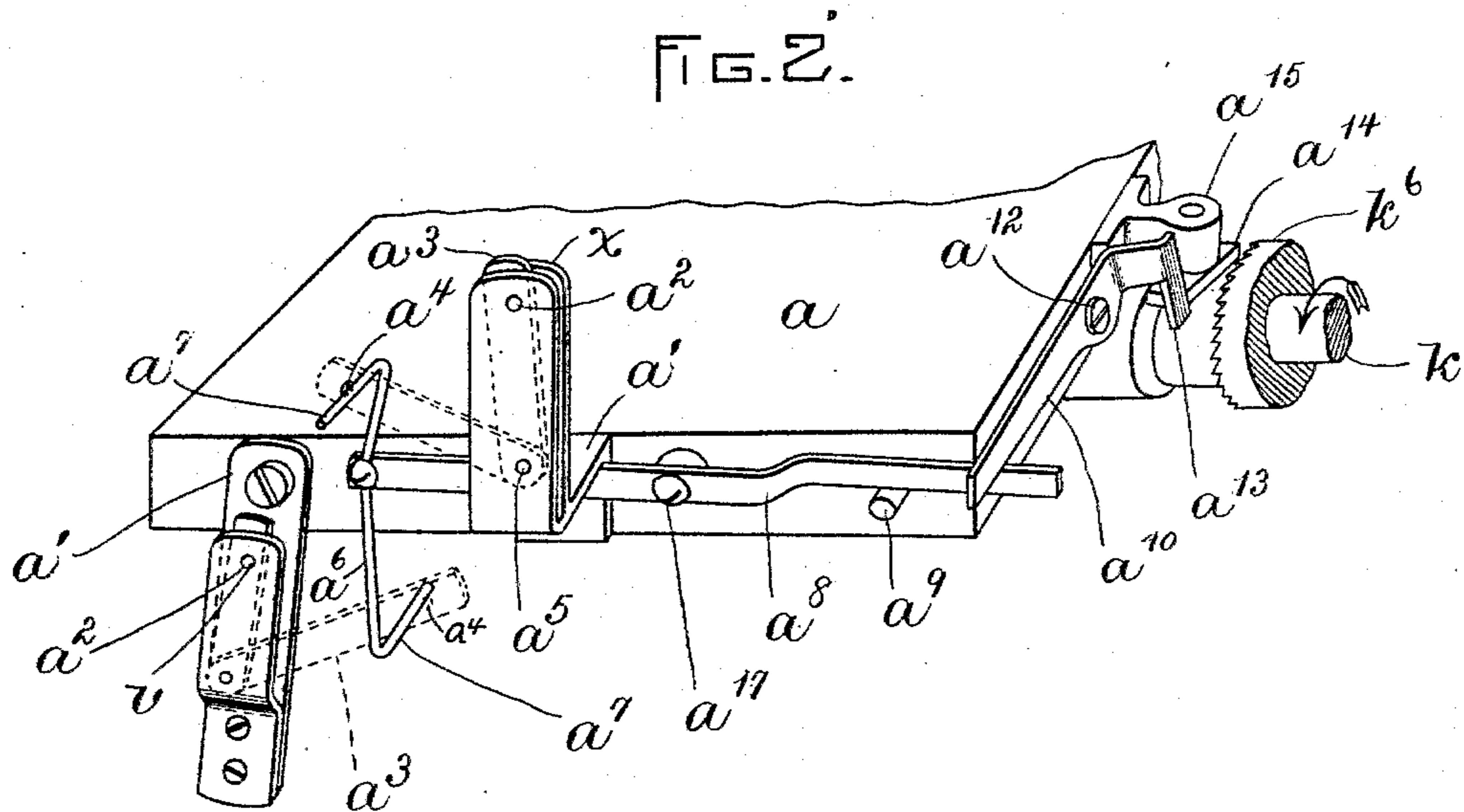
2 Sheets—Sheet 2.

J. BRADLEY.

KNOCK-OFF MECHANISM FOR KNITTING MACHINES.

No. 584,206.

Patented June 8, 1897.



WITNESSES:

A. D. Harrison  
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# UNITED STATES PATENT OFFICE.

JOHN BRADLEY, OF CHELMSFORD, MASSACHUSETTS.

## KNOCK-OFF MECHANISM FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 584,206, dated June 8, 1897.

Application filed May 9, 1895. Serial No. 548,660. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN BRADLEY, a citizen of the United States, residing at Chelmsford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Knock-Off Mechanism for Knitting-Machines, of which the following is a specification.

This invention relates to knitting-loom attachments; and it consists in the novel features of construction and relative arrangement of parts hereinafter fully described in the specification, clearly illustrated in the drawings, and particularly pointed out in the claims.

Reference is to be had to the accompanying two sheets of drawings, forming a part of this application, in which like characters are used to indicate like parts wherever they occur.

Figure 1 represents a top plan view of a knitting-loom provided with my improvement. Fig. 2 is a perspective view of a portion of the frame of the machine, showing my knock-off mechanism attached thereto. Fig. 3 is a detail sectional view on the line 2 2 of Fig. 1, showing the tension attachment mounted in operative position.

While my invention may be used with any desired machine, I have shown it applied to a machine of the kind disclosed and claimed in a patent granted to me May 7, 1895, No. 538,653. The bed or frame *a*, the needle-head *b*, needles *c*, yarn-guide *f*, stitch-wheel *g*, pressure-wheel *h*, the revoluble warp-carrier *l*, driving-shaft *k*, the spools *o*, mounted upon the warp-carrier *l*, the weft-guide and warp-raiser *u*, the work-depressor *y*, and the clearing-wheel *z* may be and preferably are of the form and construction shown in the application above referred to and require no further description here, it being understood that the shaft *k* is suitably connected to the head *b* and the revoluble warp-carrier *l* in any desired way, preferably by gears.

In practice it has been found necessary to provide some means whereby a uniform tension may be maintained upon the spools *o* while the yarn or warp is being drawn from these spools into the machine. This may be done in various ways, but I prefer the arrangement and construction shown in the drawings, in which *s'* represents a lever, pref-

erably of spring metal, pivoted by ears *s*<sup>2</sup> to the warp-carrier. One arm of this lever is arranged to engage and bear upon the warp-thread in a spool *o*, there being a lever for each spool. The other arm of this lever is provided with a screw *s*<sup>3</sup>, that engages a block *s*<sup>4</sup>, mounted in a chamber in the carrier and bears outward by means of a spring *s*<sup>5</sup>. By turning the screw *s*<sup>3</sup> the tension upon the spools may be adjusted at will. It will thus be seen that as the warp-thread is drawn off from the spools one arm of the lever *s'* will be kept in contact with the warp on the spool by means of the spring *s*<sup>5</sup>. The arc in which the end of the lever *s'*, that bears on the yarn, moves is so small that the tension of the spring *s*<sup>5</sup> is practically uniform, and hence the friction maintained upon the warp and the tension established thereby is uniform whether the spool is full or partially empty.

I provide improved means whereby upon the failure or breaking of the weft-thread *v* or the regular knitting-thread *x* the machine may be stopped. It is not necessary to provide any means for stopping the machine on the failure of a warp-thread, the distance being so small between the spool and the fabric that the thread practically never breaks.

The knock-off mechanism just referred to is clearly shown in Figs. 1 and 2. Loosely mounted upon a driving-shaft *k* is a driving-wheel *k*<sup>2</sup>, provided with a clutch part *k*<sup>4</sup>, arranged to engage a complementary clutch member *k*<sup>5</sup>, secured to the driving-shaft.

*k*<sup>3</sup> is a collar on the end of the shaft to prevent the wheel *k*<sup>2</sup> being forced off the shaft.

*k*<sup>6</sup> represents a series of teeth formed on the inside of the wheel and arranged to engage at suitable times a dog *a*<sup>14</sup>, pivoted in a bracket *a*<sup>15</sup>, secured to the bed *a* of the machine. The weft-thread and the regular knitting-thread are led to the machine through split brackets *a*<sup>1</sup>, secured to the bed *a* of the machine, and provided with apertures *a*<sup>2</sup>, through which the thread passes.

*a*<sup>3</sup> represents a pivoted arm pivoted at one of its ends in the split bracket and provided with a hole *a*<sup>4</sup>, arranged to register with the apertures *a*<sup>2</sup> in the split bracket. When the parts are in the full-line position shown in Fig. 2 and the yarn in the apertures *a*<sup>2</sup> and *a*<sup>4</sup>, these apertures will register and the piv-

oted arm  $a^3$  will be a little off its dead-center, so that upon breaking or failure of the thread the pivoted arm will drop into its dotted-line position. In so dropping this pivoted arm  
 5 engages an arm  $a^7$ , secured to the end of a lever  $a^8$ , pivoted at  $a^{11}$  to the bed of the machine. The opposite end of this lever engages a lever  $a^{10}$ , pivoted to the adjacent side of the machine, one arm of this lever being provided  
 10 with a finger  $a^{13}$ , inclined, as in Fig. 1, so as to form a cam arranged to engage the dog  $a^{14}$ . The parts being in the position shown in Fig. 2 in full lines, now if the thread should break or fail the pivoted arm  $a^3$  would drop into its  
 15 dotted-line position, thereby operating the levers  $a^8$  and  $a^{10}$  and throwing the dog  $a^{14}$  outward to be engaged by the teeth  $k^6$ . This engagement of the dog with the teeth  $k^6$  forces the wheel  $k^2$  outwardly toward the collar  $k^3$ ,  
 20 disengaging the clutch members  $k^4 k^5$ , thereby stopping the machine.

$a^9$  is a lug secured to the bed of the machine, on which one arm of the lever  $a^8$  rests.

It will be obvious that the knock-off mechanism will be operated upon the failure of  
 25 either of the threads  $x$  or  $v$  or both of them.

Having thus explained the nature of my invention and described a way of constructing and using the same, though without attempting to set forth all the forms in which  
 30 it may be made or all the modes of its use, what I claim, and desire to secure by Letters Patent, is—

1. A knock-off mechanism, comprising in  
 35 its construction a rotary shaft, a driving-wheel slidably mounted on the shaft, a clutch

member affixed to the shaft, and having teeth engaging complementary teeth on the wheel, teeth  $k^6$  formed on the slidable wheel, a pivoted arm  $a^3$  adapted to be held in an inclined  
 40 position by the knitted thread and to fall when the thread breaks or fails, a lever directly in the path of the pivoted arm, a pivoted dog, and means coacting with the last-mentioned lever to throw the end of the dog  
 45 into engagement with the teeth  $k^6$  and thereby force the wheel out of engagement with the clutch member.

2. A knock-off mechanism, comprising in its construction a rotary shaft, a driving-  
 50 wheel slidably mounted on the shaft, a clutch member affixed to the shaft, and having teeth engaging complementary teeth on the wheel, teeth  $k^6$  formed on the slidable wheel, a pivoted arm  $a^3$  adapted to be held in an inclined  
 55 position by the knitted thread and to fall when the thread breaks or fails, a second arm  $a^3$  adapted to be held in an inclined position by the weft-thread and to fall when the latter breaks or fails, and means located in the path  
 60 of either of said arms  $a^3$  for acting upon a dog to throw the end of the dog into engagement with the teeth  $k^6$  and force the wheel out of engagement with the clutch member.

In testimony whereof I have signed my  
 65 name to this specification, in the presence of two subscribing witnesses, this 27th day of April, A. D. 1895.

JOHN BRADLEY.

Witnesses:

C. F. BROWN,  
 A. D. HARRISON.