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Patented Oct. 16, 1900.

W. H. RAMSEUR & D. W. RAMSEY.
DOUBLING MACHINE.

(Application filed Dec. 18, 1899.)

(No Model.)

Fig. 1.

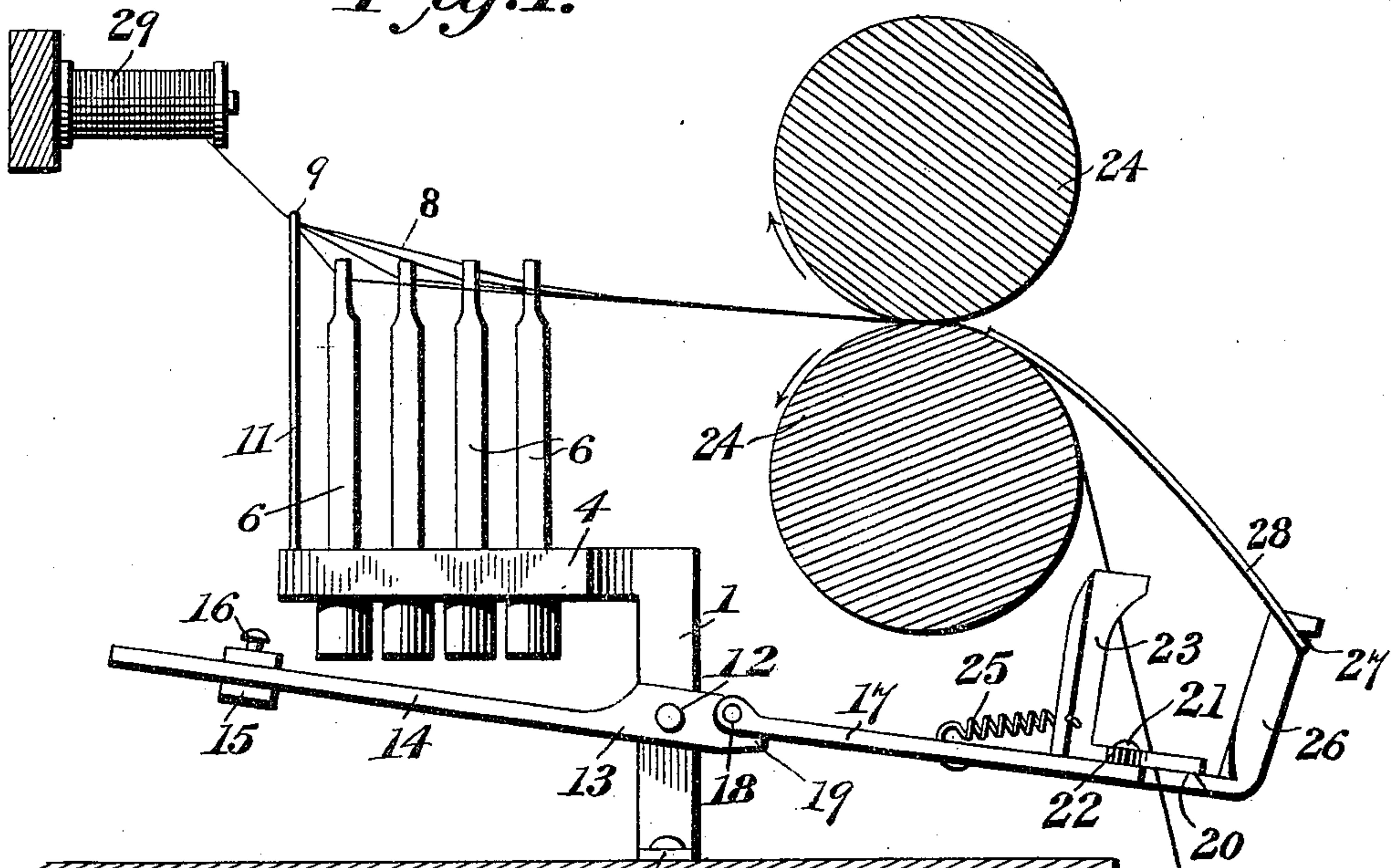
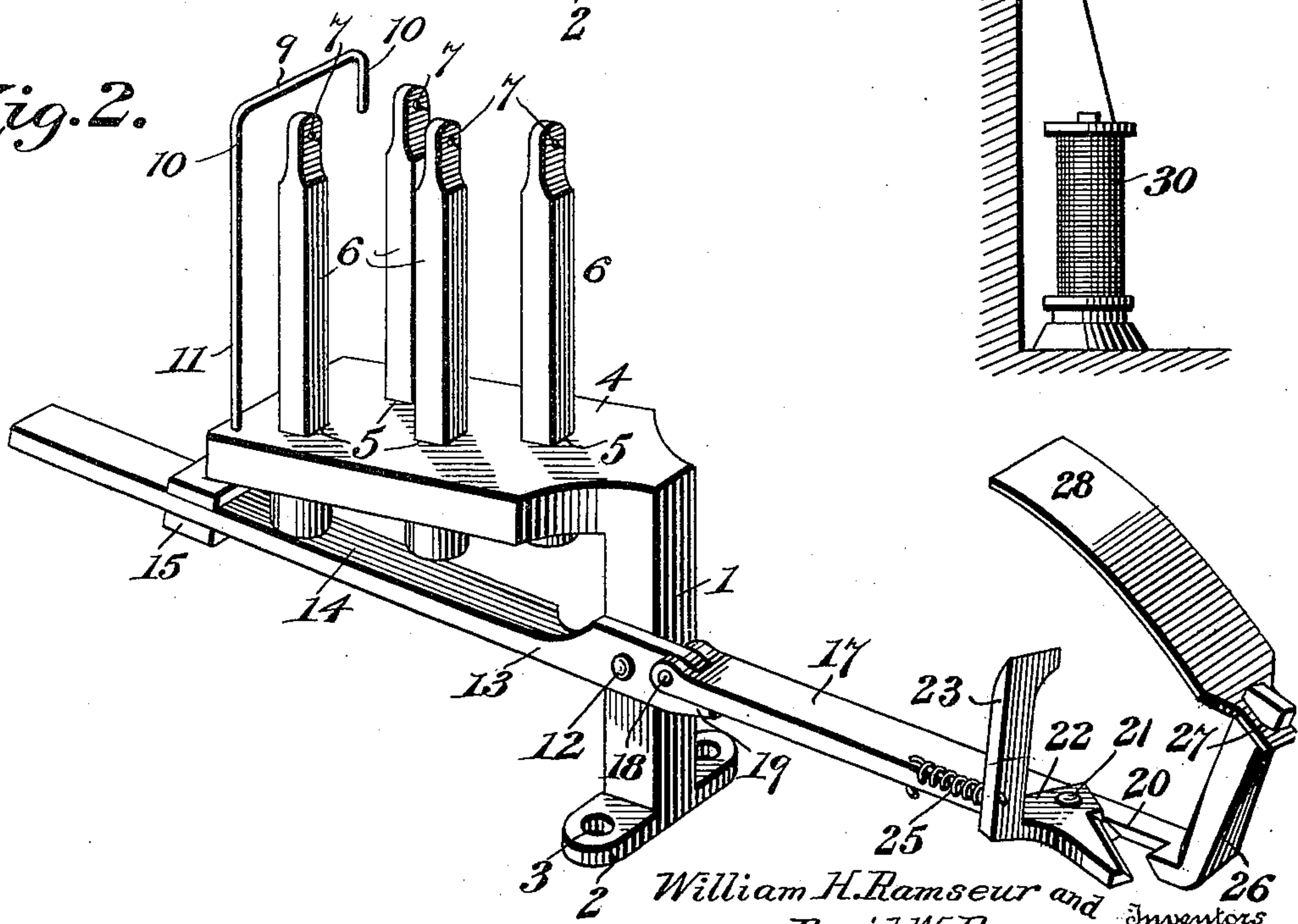


Fig. 2.



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WILLIAM H. RAMSEUR AND DAVID W. RAMSEY, OF CHARLOTTE, NORTH CAROLINA.

DOUBLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 659,695, dated October 16, 1900.

Application filed December 18, 1899. Serial No. 740,750. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM H. RAMSEUR and DAVID W. RAMSEY, citizens of the United States, residing at Charlotte, in the county of Mecklenburg and State of North Carolina, have invented a new and useful Doubling-Machine, of which the following is a specification.

In doubling-machines which operate to twist a number of strands or threads upon each other to form two-ply, three-ply, and four-ply threads, &c., it is very important to stop the machine upon the breakage of one or more of the threads being so twisted in order that the product may be uniform and contain the desired number of plies or threads.

The object of this invention is to provide simple mechanism whereby the breaking of any particular thread or threads will immediately throw into operation a cutter which will sever all of the threads between the supply-spools and the bobbin, thus throwing the machine out of operation.

The detailed objects and advantages of the invention will appear more fully in the course of the ensuing description.

The invention consists in a stop-motion for doubling-machines embodying certain novel features of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and incorporated in the claims.

In the accompanying drawings, Figure 1 is a side elevation showing the mechanism of the stop-motion and also showing the guide-rolls of the doubling-machine, said view further showing the supply-spools and bobbin and the several strands or threads engaged by the gravity-slides. Fig. 2 is a perspective view of the device of this invention detached from the machine ready for application to any doubling-machine.

Similar numerals of reference designate corresponding parts in both figures of the drawings.

In the drawings, 1 designates a bracket provided with a suitable base 2, having openings 3 to receive fasteners whereby the bracket may be secured to the frame of the machine. The bracket 1 comprises an offstanding and horizontally-disposed guide-plate 4, of suit-

able length and width to contain a number of apertures 5, in which is arranged a corresponding number of gravity-slides 6. These slides may either be plain or provided with weights or weighted in any suitable manner and are mounted to slide freely through the apertures 5, and each slide is further provided at or near its upper end with a thread-receiving eye 7, through which one of the strands 8 passes.

Secured to the guide-plate 4 is a thread-collecting guide 9, having parallel pendent portions 10, between which the strands run in their passage to and through the eyes 7 of the gravity-slides. The collecting-guide 9 is carried by the upper end of a standard 11, which is secured to the guide-plate in any convenient manner.

Fulcrumed on the bracket 1 at the point 12 is an operating-lever 13, the longer arm of which is horizontally widened to form a ledge or table 14, which underlies and is arranged in the path of all of the gravity-slides 6. Connected with said long arm of the lever or table is a balance-weight 15, which is adjustable longitudinally thereon by means of a binding-screw 16, passing through the weight and bearing against the lever, so as to properly poise said lever.

Connected to the other or short arm of the lever is a lever-arm 17. The lever-arm 17 is connected by a pivot 18 to the lever 13, and the lever is provided with a horizontally-extending shoulder 19, which coöperates with the lever-arm 17 to normally uphold said lever-arm in longitudinal alinement with the lever itself, as clearly shown in the drawings, the lever and lever-arm being thus connected by a knuckle-joint, which will allow the lever-arm to swing upward without depressing the longer arm of the lever.

The lever-arm 17 is provided near its outer end with a cutting edge 20, and mounted pivotally at 21 on said lever-arm is a vibratory cutter 22, which operates across the cutting edge 20 for severing the threads. The cutter 22 is also provided with an L-shaped upward extension or cutter-arm 23, which is adapted to come in contact with one of the guide-rolls 24 when said lever-arm is swung upward by means hereinafter set forth. A hold-off

spring 25 is interposed between a lateral extension of the cutter and a fixed point on the lever-arm, the function of said spring being to hold the cutter 22 away from the cutting edge 20 and allow the twisted threads or strands to pass therethrough without interference.

The lever-arm is provided at its end with an upward extension or finger 26, the upper end of which is notched, as shown at 27, to receive and engage a flexible pull-strap 28, which extends upward at an inclination and lies with its extremity partially inserted between the rolls 24 of the mechanism and just ready to be engaged by said rolls upon a slight upward movement of the lever-arm.

29 designates a series of spools from which the individual threads or strands are taken, and 31 represents the bobbin, upon which the twisted or compound thread is wound.

The several threads from the spools 29 are passed first through the collecting-guide 9, and thence individually through the respective eyes of the gravity-slides 6. The strands or threads are then brought together and passed between the guide-rolls 24 and after being twisted are carried downward between the cutter 22 and cutting edge 20 of the lever-arm and from that point carried to the bobbin 30, upon which the twisted thread is wound. Should one of the threads or strands 8 break, the gravity-slide of that thread will at once descend and come in contact with the table or ledge portion of the operating-lever 13, which, being accurately balanced by means of the weight 15, easily descends under the weight of the gravity-slide, thus elevating the lever-arm 17. As said arm moves upward, however, the extremity of the pull-strap 38 is forced between the rolls 24 sufficiently to be grasped and frictionally engaged thereby, whereupon the rolls act to draw upward on the pull-strap and further elevate the pivoted lever-arm 17. In the upward movement of said arm the cutter-arm 23 comes in contact and coöperates with one of the guide-rolls, with the result that a cutter 22 is vibrated, thereby effecting a severance of the twisted thread. This stops the machine and prevents the further twisting of an insufficient number of strands and enables an attendant to repair the broken thread and again start the machine.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. The combination with drawing-rolls of a

thread-doubling machine, of a normally-inactive cutter, thread-sustained devices for giving an initial movement to said cutter, roll-actuated means operable to move the cutter subsequent to said initial impulse, and means for positively operating the cutter during the period of its supplemental movement, as set forth.

2. The combination with drawing-rolls of a thread-doubling machine, of a swinging cutter-carrying member, a normally-inactive cutter on said member, roll-actuated means connected with said swinging member, thread-sustained devices operable to initially move the member and bring the roll-actuated means into service for giving a supplemental movement to the member, and means for operating the cutter positively, as set forth.

3. The combination with a series of thread-sustained members, and drawing-rolls, of a jointed lever having an arm in the path of the members, a normally-inactive cutter mechanism on the other arm of the lever, means actuated by the drawing-rolls for giving a supplemental movement to the cutter mechanism subsequent to the impulse given thereto by a member engaging the lever, and means for actuating the cutter automatically during the period of movement due to the impulse of the roll-actuated means.

4. The combination with a series of gravity-slides normally upheld by the threads of a doubling-machine, of a lever arranged in the path of said slides, a cutter operatively connected with said lever, and a pull-strap operatively associated with said lever and adapted to be operated upon by the opposing rolls.

5. The combination with a plurality of gravity-slides normally upheld by the threads of a doubling-machine, of a lever arranged in the path of the slides, a thread-cutter operatively connected with said lever and a flexible pull-strap connected to the lever and having its opposite end arranged adjacent to the guide-rolls of the machine.

6. The combination with a plurality of gravity-slides normally upheld by the threads of a doubling-machine, of a lever arranged in the path of the slides, a thread-cutter operatively connected with said lever, and means interposed between said lever and the guide-rolls for acting on the lever and throwing the cutter into operation.

7. The combination with a plurality of gravity-slides normally upheld by the threads of a doubling-machine, of a lever arranged in the path of the slides, a thread-cutter movable with said lever, means for counterpoising the lever, a hold-off spring connected to said cutter, and means in the path of the cutter to actuate the latter on the movement of the lever.

8. The combination with a plurality of gravity-slides normally upheld by the threads of a doubling-machine, of a lever arranged in the path of the slides, a pivoted lever-arm connected thereto, a cutter carried by said arm,

and cutter-operating means actuated by the guide-rolls upon the breakage of the thread, substantially as described.

9. The combination with a plurality of gravity-slides normally upheld by the threads of a doubling-machine, of a lever arranged in the path of the slides, a pivoted arm connected to the lever by a knuckle-joint, a cutter carried by said arm, and means adapted to be operated upon by the guide-rolls for vibrating the lever-arm and operating the cutter.

10. The combination with a plurality of gravity-slides normally upheld by the threads of a doubling-machine, of a lever arranged in the path of the slides, an arm having a jointed connection with the lever, a thread-cutter carried by the arm, means for counterpoising the lever against the weight of the arm and the cutter, and means for moving the arm and the cutter subsequently to the movement of the lever under the impulse of one of the slides.

11. The combination with a plurality of gravity-slides normally upheld by the threads of a doubling-machine, of a lever arranged in the path of the slides and provided at its extremity with a projecting finger, a pull-strap connected to said finger and having its extremity arranged to be operated upon by the guide-rolls, and the thread-cutter carried by said lever.

12. The combination of a table, a plurality of gravity-slides guided by the table and normally upheld by the threads of a doubling-machine, a counterpoised lever arranged in

the path of the slides, a thread-cutter carried by said lever, means for automatically throwing the cutter into operative position on its movement with the lever, and a collecting-guide fixed to the table and arranged between the supply-spools and the gravity-slides.

13. The combination with drawing-rolls, and thread-sustained members, of a jointed lever having one of its arms provided with a cutter edge, a movable knife fitted to said lever-arm and provided with a finger arranged to impinge one of the rolls, and a retractor for the knife, substantially as described.

14. The combination with drawing-rolls, and thread-sustained members, of a lever having an arm jointed thereto for limited independent movement, a thread-cutter having its fixed and movable members carried by said jointed lever-arm, a finger on the movable cutter member, a retractor for said movable cutter member, and means for giving movement to the jointed arm and the thread-cutter subsequent to the movement of the lever under the action of one thread-sustained member.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

WILLIAM H. RAMSEUR.
DAVID W. RAMSEY.

Witnesses:

C. G. WEARN,
W. D. COWLES.