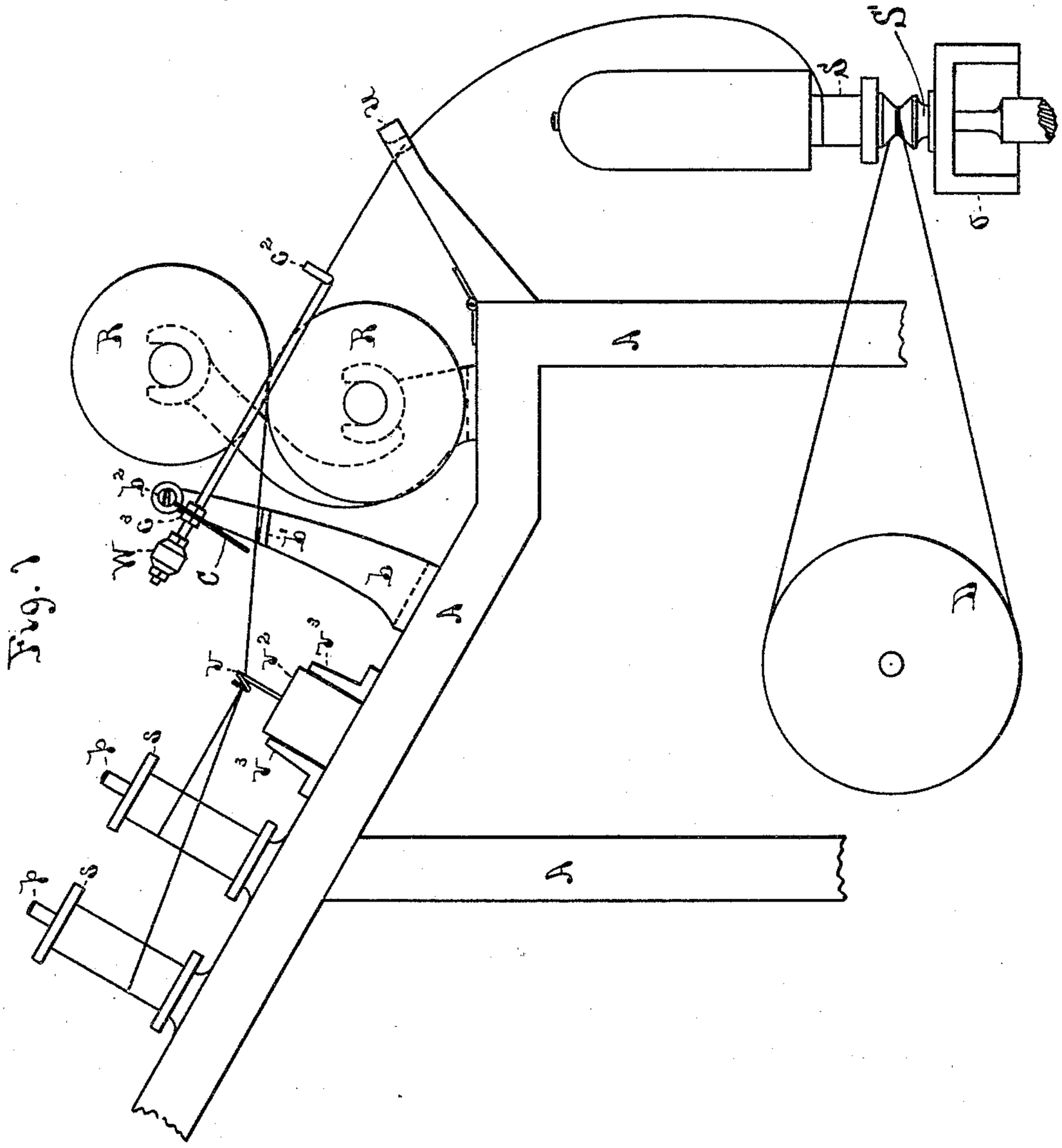
(No Model.) 2 Sheets—Sheet 1.

W. E. WALSH.

THREAD CUT-OFF FOR SPINNING AND TWISTING MACHINES.

No. 431,177 Patented July 1, 1890.



Witnesses
Wm. S. Brown
A. P. Ockington

Inventor
Wm. E. Walsh.

(No Model)

2 Sheets—Sheet 2.

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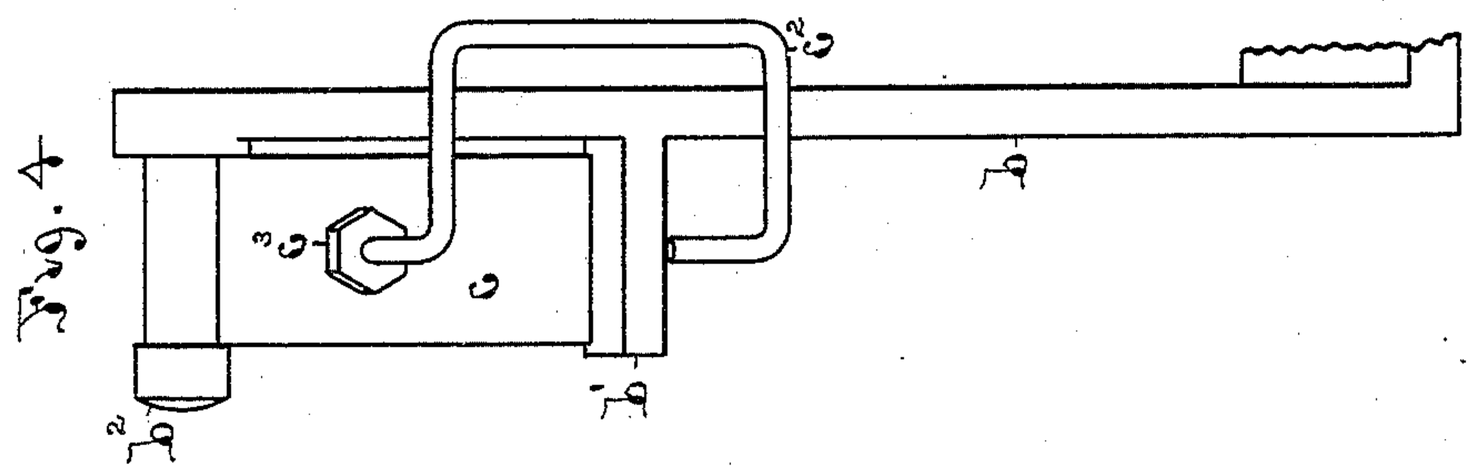

Fig. 4

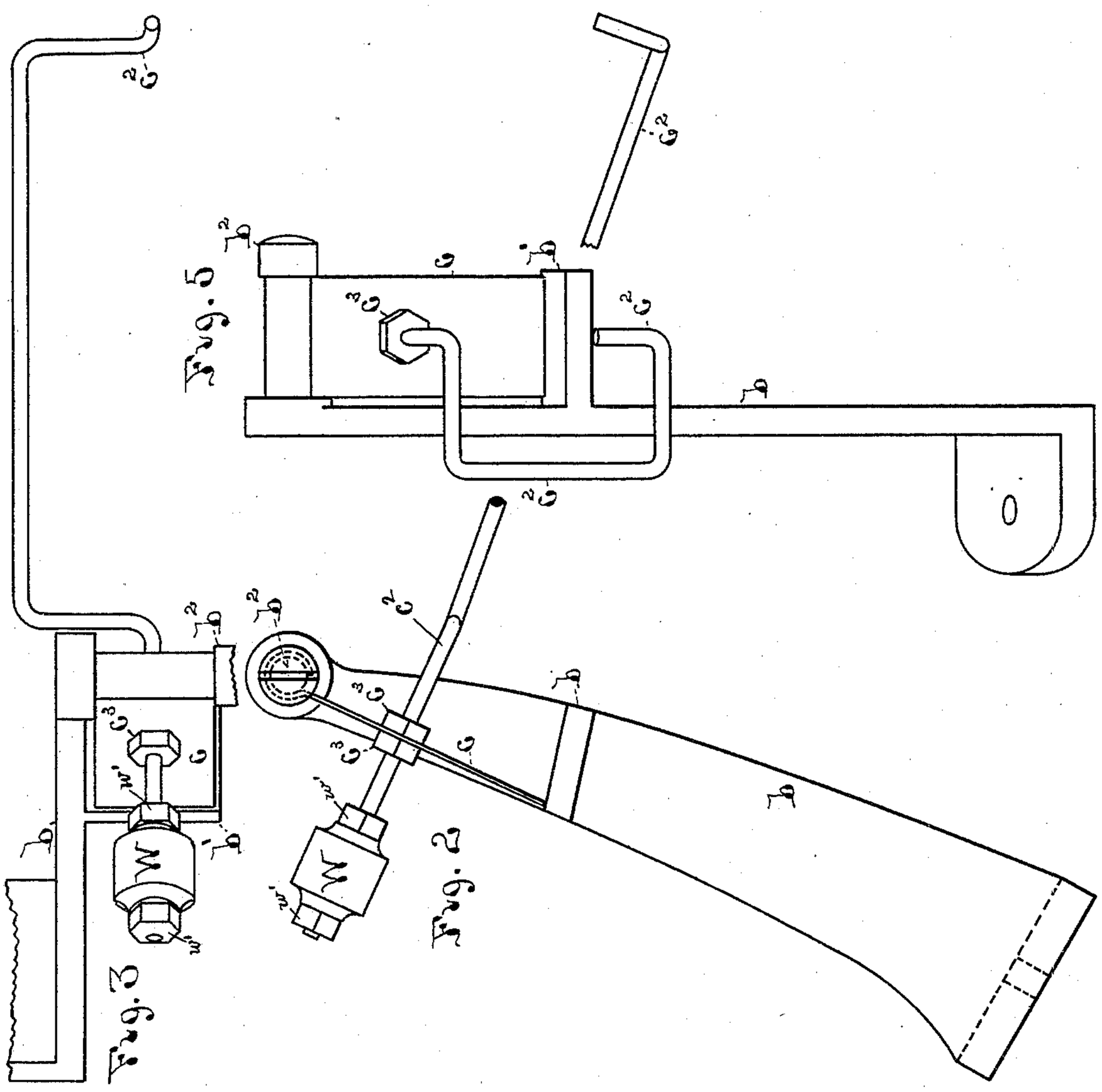

Fig. 5

Fig. 3

Fig. 2

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UNITED STATES PATENT OFFICE.

WILLIAM E. WALSH, OF LOWELL, MASSACHUSETTS.

THREAD CUT-OFF FOR SPINNING AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 431,177, dated July 1, 1890.

Application filed July 21, 1888. Serial No. 280,642. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. WALSH, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Thread Cut-Offs for Spinning and Twisting Machines, of which the following is a specification.

My invention relates to spinning and twisting machines; and it consists in a new and useful construction and combination therewith of a cut-off mechanism for the thread or sliver, substantially as hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of a portion of a spinning-frame provided with my improvements. Fig. 2 is a side elevation of the thread cut-off enlarged, part being broken away. Fig. 3 is a top plan view thereof. Fig. 4 is an end elevation of the same. Fig. 5 is the same mechanism as Fig. 4, with its thread-finger made left-handed instead of right-handed, and set the other way upon its bracket.

A is the frame of the machine. On this frame are mounted two pivots or pins *p p*, upon which the spools *s s* revolve. These spools carry the threads or slivers, which are to be retwisted in the machine. The threads from these spools are first led through the guide *v*, attached to the bar v^2. This bar may be slid along longitudinally between the brackets v^3 v^3, to direct the thread properly. The threads are next conducted through my cut-off mechanism. Thence they lead between the rollers R R, which feed them forward toward the spindle, and thence over the arm c^2 of the cut-off mechanism and through the guide *u* to the spool S on the spindle S′. All of these parts, except my cut-off mechanism and the sliding bar of guide *v*, are well known and in common use. The spindle is provided with the ordinary cap employed for spinning woolens, and the rotation of the spool twists together the two threads from the bobbins *s s* in the opposite direction from their previous twist.

My cut-off mechanism consists of a bracket *b*, attached to the frame A, carrying on one side of it the shelf *b′* and the stud b^2, which project laterally across, above and below the path of the threads being twisted. On the stud b^2 is pivoted the swinging plate *c*, which is of just the right length to have its edge on its lower end catch upon the surface of the shelf *b′* when it is attempted to be swung past the shelf. Through this plate is passed the wire arm c^2, which is held in its place in the plate by check-nuts c^3 c^3, screwed upon it up against each face of the plate. On one end this wire arm carries the weight W, made adjustable back and forth between nuts *w′ w′* on the arm c^2, which hold it in place, and the other end of the arm is bent so as to pass around the rollers R R, and then bent back again so as to pass under the threads being twisted between the rollers and the guide *u*, and cause the thread to drag across it as it passes onward to the spindle. The arm c^2 and weight W are so proportioned that this drag of the thread will press down the arm at that end and swing the plate *c* away from the shelf *b′* and allow the threads to pass over the shelf beneath the plate. If, however, the tension of the thread be taken from arm c^2, the weight W causes the plate *c* to swing down upon shelf *b′* and bite off the thread passing beneath it. In case, therefore, either thread from the bobbins *s s* is broken, when the broken end passes the rollers R R the tension of the spindle breaks down the other thread, and the plate *c* descends upon shelf *b′* and bites off the thread at that point, thus preventing it from continuing to be drawn forward by the rollers and wound thereon and converted into waste until the operator can find time to piece it up.

By the adjustment of the guide-bar v^2 the thread can be directed away from under plate *c* or between it and the bracket *b*, as may be desired. This is accomplished by moving the bar longitudinally a sufficient distance to carry the thread off the bracket sidewise or back again between it and the plate *c*, and is especially valuable when it is desired to change the spool S upon the spindle, when filled with yarn, for an empty one. In effecting such change the thread must necessarily be broken off next to the spool, and this would let the plate *c* down upon the thread and cut it off if the thread were passing over bracket *b′*; but by shifting the guide *v*, as described, the thread may be started to wind on the empty bobbin and caught over arm c^2, when the guide can be moved so as to

carry the thread again over bracket b', all these manipulations being of course effected while the machine is running.

The weight W being adjustable with relation to the axis b^2 of the plate c, it can be set with relation to different sizes of yarn. For instance, supposing it to be set so that one thread of a particular yarn to be doubled shall not hold down the arm c^2 while both threads will. Then when a lighter or heavier size of yarn is to be doubled it can again be set to accommodate itself to that in the same way. The adjustment of the weight W may be effected either by altering the nuts c^3 c^3 on the arm c^2, or by the nuts w' w', which secure it upon the arm, as preferred.

The spindle S is driven by a band from the drum D in the usual manner and is supported in the rail o, attached to the frame.

It will be noticed that by means of the plate c, cutting off the threads behind the point where one of them is stranded, the piecing up of the end where there is but a single thread is prevented in great measure. This gives a better piecing, as the operator must, as a rule, piece or tie up the broken thread where both parts of it are double.

In case one of the threads from the spools s s on the studs p p is broken, as above described, and the other thread be not broken down, but continues to pass the rollers R R and be wound upon the spindle-bobbin, my arrangement of the parts will still operate to cut off the thread by the plate c, because I am enabled to adjust the balance of the plate so delicately, by the weight W being adjustable, that the arm c^2 will be held down by the weight or drag of two threads, but not by the weight of only one running from rolls R R to the spindle. I am thus enabled to give the mechanism greater capacity of action and prevent one thread or sliver from the spools s s from parting and being carried around one of the rollers R R, while the other keeps on winding onto the spindle and continues holding down the arm c^2, which causes bad work and the necessity of both clearing off the roll and unwinding the single strand from the spool on the spindle before piecing up. As it is obvious that this delicacy of operation requires a different adjustment of the balancing-weights of the cut-off plate every time a different number of yarn or sliver is to be twisted from the spools s s, it is evident that the adjustability of the weight W is of the greatest importance, for by that means I can arrange the balance of the cut-off plate c so that it will overcome the tension of a single thread of any particular number of yarn, when the other thread parts and begins to wind around roll R, and thus attain the above-described delicacy of adjustment and superiority of operation with any different number of yarn instead of with only one. When the weight W brings the plate c down upon its table or shelf b', it assists in starting the bite of the cutting-edge of the plate, and both the yarns are thus cut squarely off, although the machine operates so delicately, and no stranded and torn or dragged-out ends of the yarns are left where they are to be pieced up, as would be the case if the strands were pulled apart. The adjustment of the weight W thus enables it to perform this double function with certainty.

What I claim as new and of my invention is—

1. The combination of the spindle, the guide u, the feeding-rolls R R, the spool-studs p p, the shelf b', and the pivoted cut-off plate c, provided with the arm c^2, extending across the path of the thread and adapted to hold the plate away from the shelf by the tension of the yarn thereon, and to allow the plate to descend and cut off the yarn when said tension is relaxed, and the weight W, mounted on said arm and made adjustable with relation to the axis of said plate, substantially as described.

2. The combination of the spindle, the guide u, feeding-rolls R R, spool-studs p p, the shelf b', pivoted cut-off plate c, placed between said rolls and studs, said plate being provided with the arm c^2, passing around said rolls and extending across the path of the thread between said rolls and the spindle and adapted to hold the plate c away from the shelf by the tension of the yarn thereon, and to allow the plate to descend and cut off the yarn when said tension is relaxed, and the weight W, mounted on said arm and made adjustable with relation to the axis of said plate, substantially as described.

3. The combination of the spindle, the guide u, feeding-rolls R R, spool-studs p p, the shelf b', the pivoted cut-off plate c, provided with the arm c^2, extending across the path of the thread and adapted to be pressed down by the tension thereof, and the adjustable guide v, adapted to direct the passage of the thread under said cut-off plate and to be moved with bar v^2 and withdraw the thread from beneath the same, substantially as described.

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Witnesses:
GEO. H. STEVENS,
SAMUEL B. WYMAN.