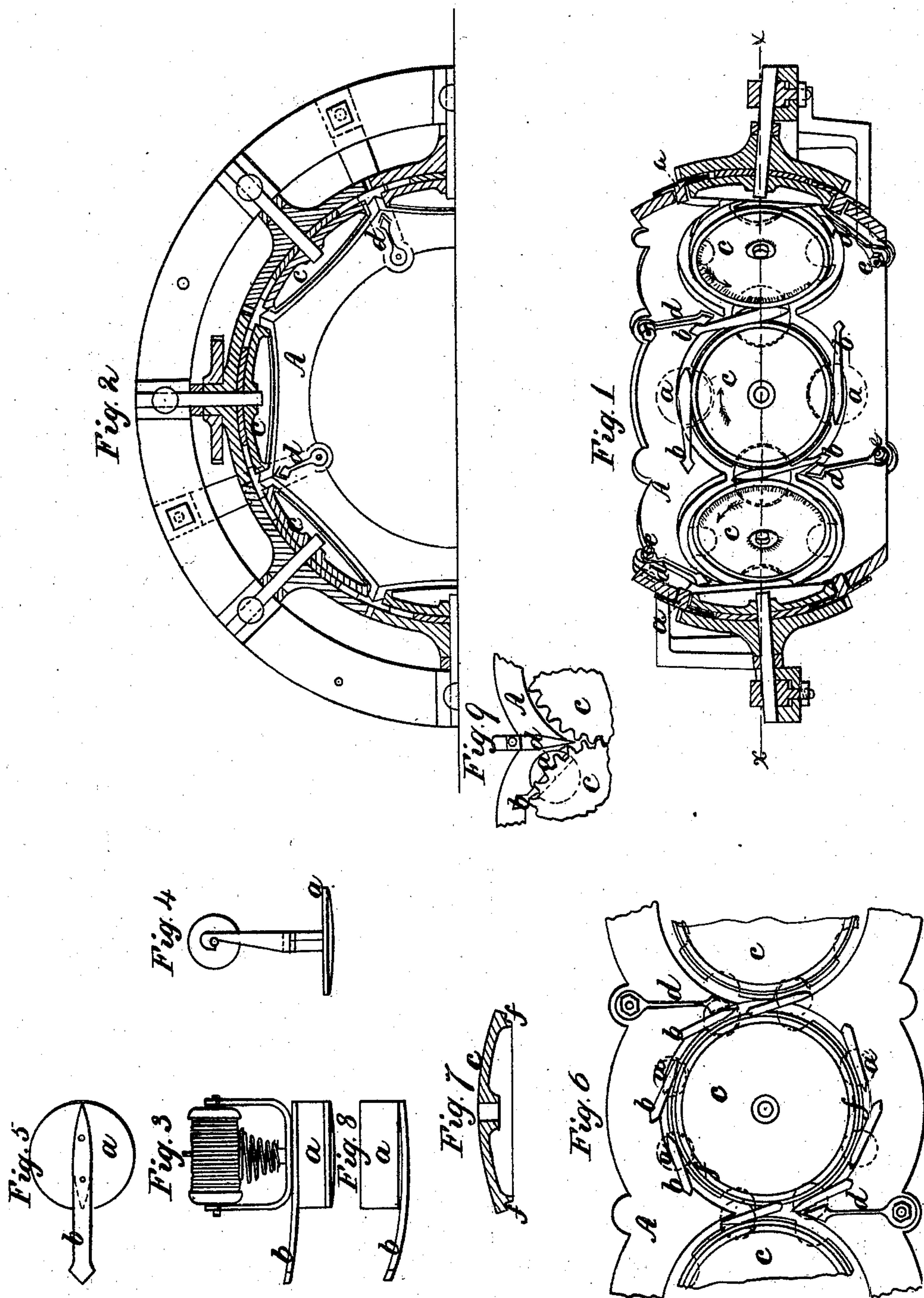


E., T. & E. SIZER & A. HALLADAY.
BRAIDING MACHINE.

No. 10,718.

PATENTED MAR. 28, 1854.



UNITED STATES PATENT OFFICE.

EPHRAIM SIZER, TITUS SIZER, EMERSON SIZER, AND AMOS HALLADAY, OF WESTFIELD, MASSACHUSETTS.

SACKET'S BRAIDING-MACHINE.

Specification of Letters Patent No. 10,718, dated March 28, 1854.

To all whom it may concern:

Be it known that we, EPHRAIM SIZER, TITUS SIZER, EMERSON SIZER, and AMOS HALLADAY, of Westfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement on Sacket's Machine for Braiding; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, forming part of this specification, in which—

Figure 1 is an elevation of the interior of the machine. Fig. 2 is a horizontal section on the line 4 4 of Fig. 1. Fig. 3 is a side elevation of racer and spool. Fig. 4 is a front view of the same. Fig. 5 is a top view of the racer. Fig. 6 is an interior view of a machine running four racers in a train. Fig. 7 is a section of carrier *c* in Fig. 6. Fig. 8 is a side elevation of racer with tail guide at bottom. Fig. 9 is exterior view of section of shell and carriers with guides on exterior.

Similar letters indicate the same part.

The braiding machine of Dudley D. Sacket, patented 22d January 1840 upon which our invention is an improvement, is so constructed that the racers are obliged to cross singly from one carrier to another, forming stitches with but a single thread. This limiting of the number of threads composing each stitch becomes a serious disadvantage to the manufacturer and it is to obviate this defect, and construct the machine so that the operator can form stitches of two, three, four or more threads that my improvement is made. The defect above stated arises from the use of the fly guide, by which the passages to the several carriers are alternately opened and shut, which construction, in addition to the limiting of the threads, gives rise to a great amount of friction in the operation of the machine, rendering it when run with rapidity almost useless, by the wearing and loosening of the fly guides.

Our improvement dispenses with the fly guides, and uses instead, stationary spring guides in the position of the fly guides, together with what we term tail guides upon the racer. This construction enables us to run the racers in trains of two, three four or more, according to the size of the carriers

used and the number of threads required to the stitch.

When the carrier becomes of large diameter for carrying long trains, the racer is liable to turn in crossing the junction of the carriers, and derange the operation of the machine. To obviate this, I construct on the inner faces of the carriers, flanges for keeping the racers in position and regulating their movements. In machines having carriers of small diameter this flange cannot be used, and is in fact unnecessary, but in the use of large carriers, it becomes indispensable, and is essential to the operation of the machine.

The description of the main features of the machine, it will be unnecessary to insert here, as reference can be made to the patent of D. D. Sacket above referred to, for a description of the construction and operation of the machine generally. The racer which in the drawing is represented by *a* has the same construction as that in Sacket's patent, except the tail guide *b*, which I add for purposes hereafter to be described. The same carriers *c* are used, and are operated to produce the motion of the racers as described in the patent above referred to. The spring guides *d* are attached to the frame A by the bolts *e* in the position given the fly guides of Sacket, above and below the carriers, between each alternate pair; they are stationary at the top and are capable of giving slightly to the pressure of the racers for diminishing the friction occasioned by the fly guides of Sacket's patent.

The operation of our machine is as follows.—The racers are first arranged in the carriers according to the number of threads required for the stitch, the number of course limited by the diameter of the carriers; Fig. 6 showing four and Fig. 1 two racers in a train. The racers are moved in the manner described in Sacket's patent by the cog wheels on the outer faces of the carriers, and pass from one carrier to another by the pressing of the tail guides *b* against the spring guides *d*, which prevents the head of the racer from continuing to move in the direction of the first carrier but compels it to turn to the adjacent one and pursue the desired course for forming the stitch. This motion as above described is caused by the action of the spring and tail guides, but

when the trains contain three or more racers the introduction of the flanges *f* upon the inner faces of the carriers *c* is required, to prevent the derangement which would ensue from the turning of the racers in passing from one carrier to the other; this keeps the racers in position by the action of the tail guide *b*, which as shown in Fig. 6 rests upon the flange *f* during the transit of the racer and causes it to pass safely to the adjacent carrier.

In small machines where but two racers are run together, the diameter of the carrier must necessarily be so small that such a flange as above described would impede the motion of the tail guides of the racers, as will be seen in Fig. 2. This flange is however unnecessary, as in such cases the small diameter of the carrier prevents the turning of the racer that would otherwise take place in large machines.

This improvement besides preventing the great friction produced by the use of Sacket's machine, permits the operator to use any number of threads for his stitch that may be consistent with the size of his machine, by a proper arrangement of the racers which is well understood by all acquainted with the use of such machines. It also presents to the builder of braiding machines the means of multiplying to an indefinite extent the number of threads to be crossed at a single time by a proper increase of the dimensions of the carriers. These results which are so important in the above mentioned particulars transform the machine of Sacket, the operation of which is so limited and ineffectual, into one capable of adjustment to suit the various requirements of manufacturers and others who use machines of this character.

Besides running the racers so as to be governed by tail and spring guides acting on the interior of the shell, as above described; the tail guide can be placed upon the bottom of the racer as shown in Fig. 8, so as to run upon the exterior surface of the shell or circle, while the spring or other guides (*d*) give the direction to the train as in the case above described.

This modification does not in the slightest degree change the character of the machine, and does not produce results differing in any respect from those described above; but is merely a different method of arranging the racers upon the carrier.

What we claim as our invention and desire to secure by Letters Patent, is—

1. The construction of the racers with the tail guides *b* substantially as described for the purpose specified.

2. We also claim the combination of the spring guides *d* with the flanges *f* on the carriers substantially as, and for the purposes herein set forth.

3. We further claim guiding the racers by means of spring and tail guides operating either on the interior or exterior of the shell or circle substantially as herein fully set forth.

In testimony whereof, we have hereunto signed our names before subscribing witnesses.

EPHRAIM SIZER.
TITUS SIZER.
EMERSON SIZER.
AMOS HALLADAY.

Witnesses:

EDW. B. GILLET,
E. A. RAY,
JOHN O. GRIFFIN.