

(No Model.)

J. E. PREST.

DRAWING FRAME AND ART OF DRAWING AND DOUBLING SLIVERS.

No. 277,606.

Patented May 15, 1883.

Fig. 1.

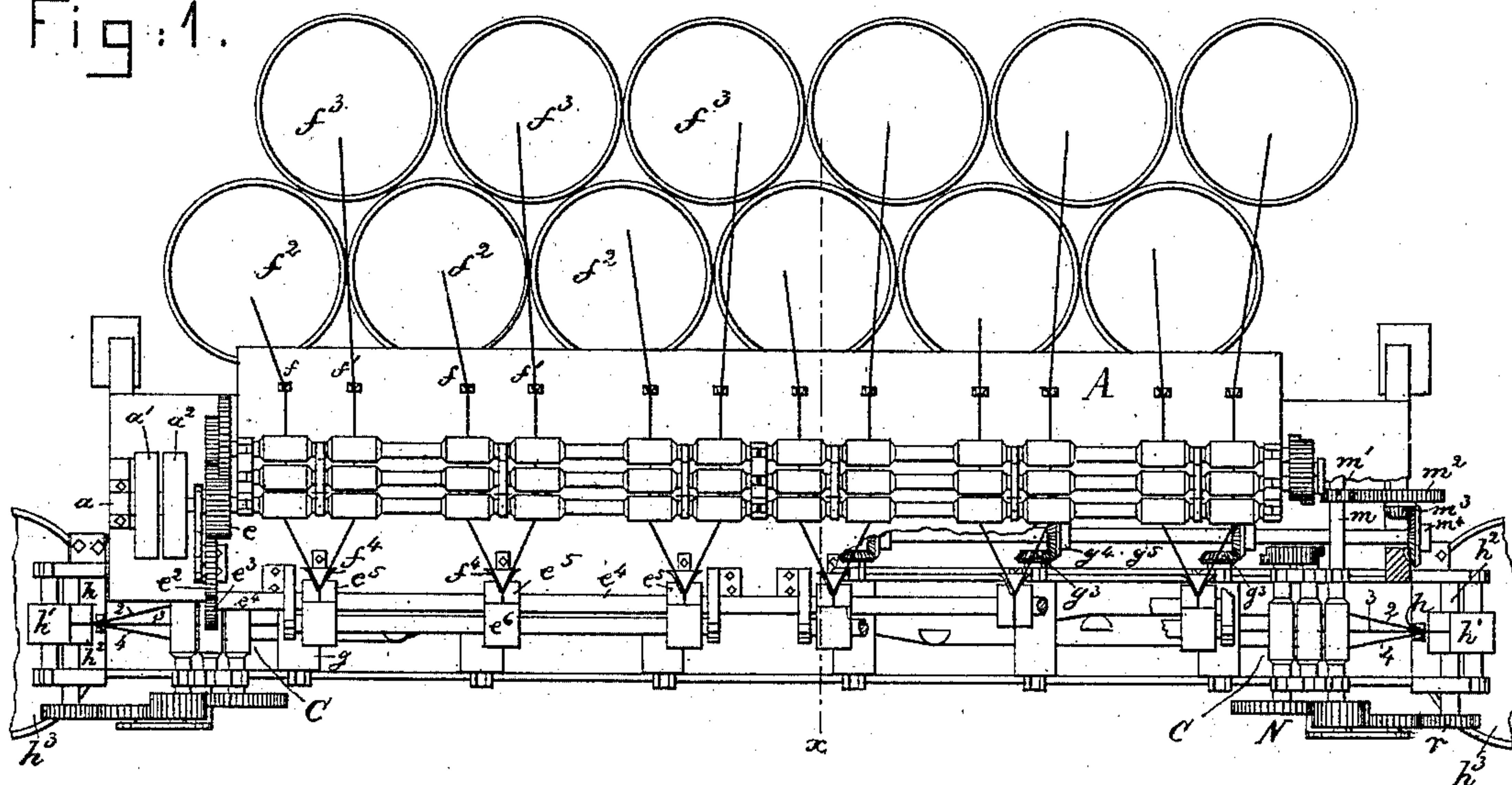
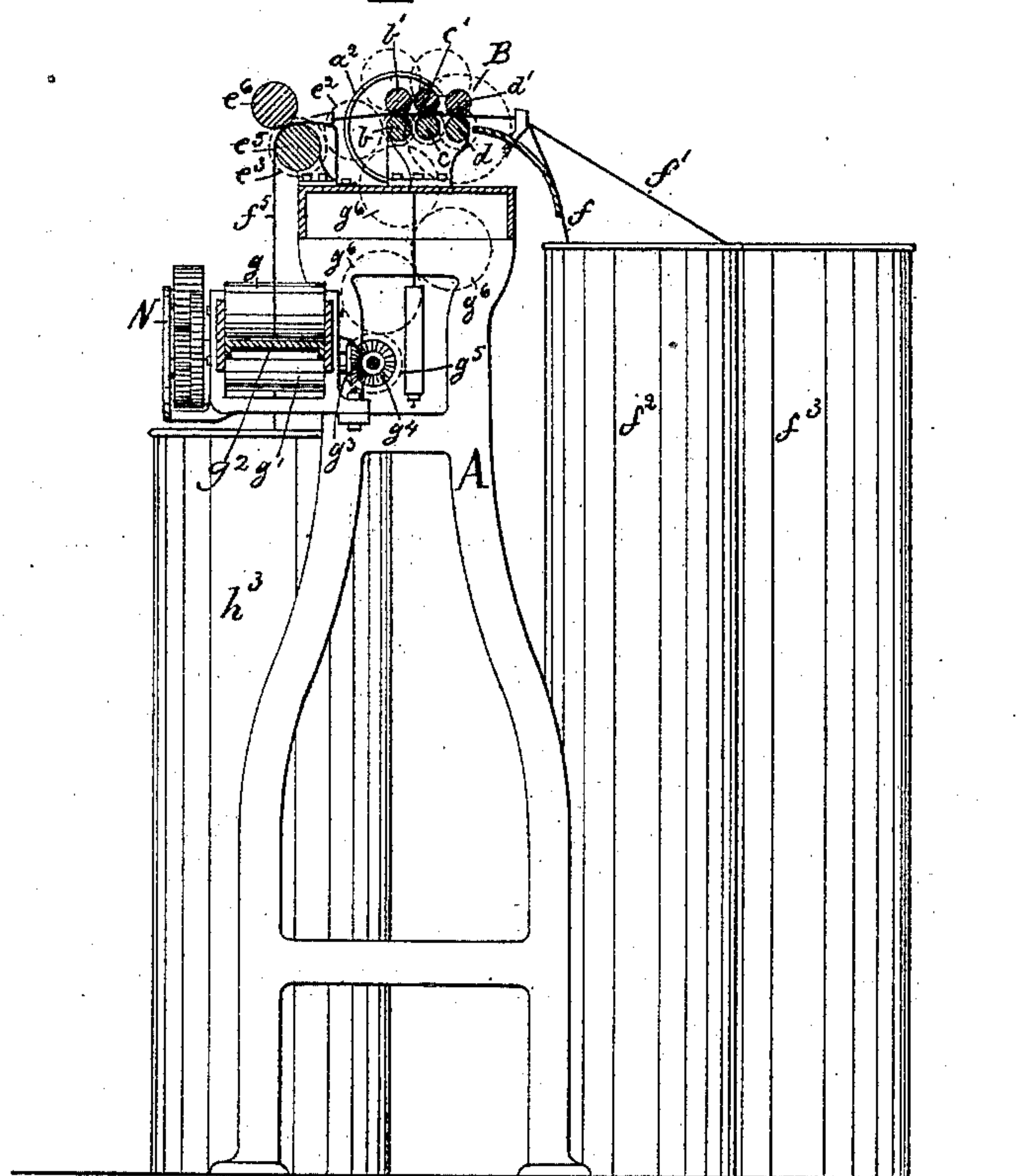


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN E. PREST, OF FALL RIVER, MASSACHUSETTS.

DRAWING-FRAME AND ART OF DRAWING AND DOUBLING SLIVERS.

SPECIFICATION forming part of Letters Patent No. 277,606, dated May 15, 1883.

Application filed November 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, J. E. PREST, of Fall River, county of Bristol, State of Massachusetts, have invented an Improvement in Drawing-Frames and in the Art of Drawing and Doubling Slivers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 In the manufacture of cotton as now practiced in cotton-factories the slivers taken from the carding-machine are placed in cans, and two or more of the said slivers taken therefrom are drawn and united to form one sliver and
15 again delivered into a can, and the doubled or combined and drawn slivers are again taken from these cans, combined with other similar doubled and drawn slivers, and again drawn and delivered into cans. So, also, a machine
20 has been devised to draw several slivers, which are then passed through trumpets and between other drawing-rollers, and then are brought together into a single trumpet, from which the single sliver, composed of several slivers previously drawn two or more times, is passed between condensing-rollers and delivered into a can. The first of these plans is objectionable, because of the many handlings required and of the liability of the slivers being broken when
30 being taken from the cans. In the second plan referred to, the slivers, which are doubled, are simply drawn, not condensed; and in practice I have discovered that it is very difficult to make uniform strong yarn when the doubling operation is performed after drawing, but without previously condensing, the slivers, for the uncondensed slivers have not sufficient strength to be fed through the machine without stretching them unevenly, which makes weak spots,
40 causing frequent breakage and resulting in the production of yarn of unequal strength.

In my experiments I have found that the slivers may be successfully drawn and doubled in succession for any number of times, provided
45 they are condensed after they are drawn and doubled; and my invention consists, essentially, in an organized machine composed of two or more independent sets of drawing-rollers, trumpets, and condensing-rollers, the first
50 set drawing, doubling, and condensing its sliv-

ers before delivering them to the second set to be again drawn and doubled.

The machine herein shown contains several sets of primary drawing-rollers, each adapted 55 to draw two or more independent slivers, a trumpet for each set of primary drawing-rollers, and condensing-rollers to condense the drawn and doubled slivers issuing from between each set of primary drawing-rollers, and also 60 other sets of secondary drawing-rollers to receive the drawn and condensed slivers from the condensing-rollers, which co-operate with the several sets of primary drawing-rollers first mentioned, and two sets of trumpets and secondary condensing-rollers following the two sets of secondary drawing-rollers referred to, the combined slivers from the said secondary rollers passing into cans. By this method I am enabled to dispense with the usual canning operation between the first and second drawing and condensing operations referred to, and consequently to make stronger and more uniform yarn and save very considerable time, thus reducing the cost of manufacture of yarn, and at 75 the same time my duplex drawing frame or head is cheaper to build than would be two independent frames such as required to do the same work in the old way, and my improved frame occupies much less space in the mill than 80 the two frames and their additional sets of cans.

Figure 1 is a top or plan view, partially broken out, of a drawing frame or head embodying my invention; and Fig. 2, a section thereof on dotted line *x*, Fig. 1.

85 The frame-work A, of suitable shape to contain the working parts, has a main shaft, *a*, provided with usual fast and loose pulleys, *a'* *a''*. This shaft *a*, as usual, carries the under roller, *b*, of the primary or main set of drawing-rollers B, composed, as shown, of three 90 pairs of rollers, *b b'*, *c c'*, *d d'*, all geared together and driven one from the other in usual manner. The pinion on the shaft *a*, through the intermediate *e''*, turns the gear *e'*, fast on the shaft *e'*, which carries and drives the lower 95 rollers, *e''*, of the primary set of condensing-rollers *e'' e''*, of usual construction. The two slivers *f f'*, shown as taken from the two cans *f'' f''* and passed between the rollers of the first set, B, of three pairs of drawing-rollers, are 100 doubled and led through the trumpets *f''* and

between the condensing-rollers $e^5 e^6$, by which they are formed into single slivers in the usual manner. These drawn and condensed slivers f^5 , issuing from between the primary condensing-rollers $e^5 e^6$, instead of being fed directly into cans, as heretofore, and as in the second plan referred to, or as in United States Patent No. 128,618, are passed under carrying-rollers g —one for each pair of rollers $e^5 e^6$ —they co-operating with rollers g' to turn the slivers, so that their course is thereafter parallel to the axes of the rollers $b b'$. As herein shown, three independent drawn and condensed slivers are turned to the right and three to the left, as shown in Fig. 1, and the two sets of three drawn and condensed slivers, so turned aside from their original course, are passed between the secondary sets, C C, of drawing-rollers, located near each end of the frame, as shown, and from between them they issue as slivers 2 3 4, and are doubled and passed through trumpets h , and thence between the secondary delivery and condensing rollers, $h' h^2$, into cans h^3 . These drawing, doubling, and condensing operations may be repeated any desired number of times before delivering the sliver into cans.

The arbors of the rollers g' are provided with bevel-pinions g^3 , meshing with bevel-pinions g^4 on a shaft, g^5 , actuated by the main shaft a through suitable intermediate gearing, g^6 , (shown in dotted lines, Fig. 2,) they thus conveying the sliver over the supporting tables or plates g^2 to the two secondary sets of drawing-rollers C, which are alike, so that I need describe but one of them.

The shaft m of the lower or front roller of the three pairs of rollers which form the set of rollers C has upon it a pinion engaged by a gear, m^2 , on a shaft or stud having attached to it a bevel-gear, m^3 , driven by a bevel-gear, m^4 , on the shaft g^5 , which actuates the rollers g' referred to and moves them and the slivers passing between them and the rollers g at the proper speed. The said shaft, by suitable gearing, N, of usual construction, actuates the remaining

pairs of rollers of the set of rollers C at the proper relative speed, and through the intermediate gears, r , drives the condensing and delivering rollers $h' h^2$, by which the combined sliver is conveyed to the cans h^3 .

I claim—

1. The set of primary drawing-rollers, a trumpet to receive the drawn slivers, and a pair of condensing-rollers to condense the drawn and doubled slivers, combined with a second set of drawing-rollers, between which the drawn and condensed slivers are placed to be again drawn, a trumpet in which the condensed slivers subsequently drawn are doubled, and with a pair of secondary condensing-rollers, to operate substantially as and for the purpose described.

2. The main set of drawing-rollers B, adapted to operate upon several pairs of slivers and draw them, and the condensing-rollers $e^5 e^6$, co-operating with them, means to operate the said drawing and condensing rollers, and the carrying mechanism to take the slivers from the said condensing-rollers and direct them to the sets of secondary drawing-rollers, and means to operate the carrying mechanism, combined with the sets of secondary drawing-rollers C C, and co-operating, condensing, and delivering rollers $h' h^2$, and means to operate the secondary drawing-rollers and condensing-rollers $h' h^2$, substantially as and for the purpose described.

3. The herein-described improvement in the art of treating slivers for the production of yarn, which consists in primarily drawing, doubling, and condensing the same, and then in a continuous operation drawing and doubling the said drawn and condensed slivers and condensing them a second time before delivering them into cans, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN E. PREST.

Witnesses:

JOS. P. LIVERMORE,
B. J. NOYES.