(No Model.) 3 Sheets—Sheet 1.

A. SMITH & H. W. WHITEHEAD.

SCREW GILL DRAWING MACHINERY.

No. 347,655. Patented Aug. 17, 1886.

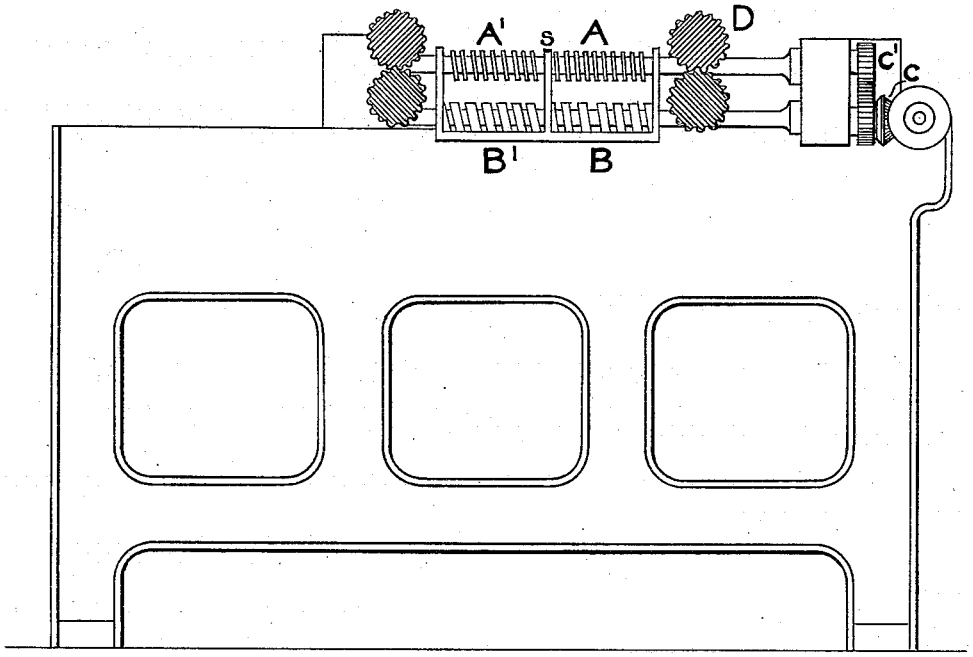

FIG. 1.

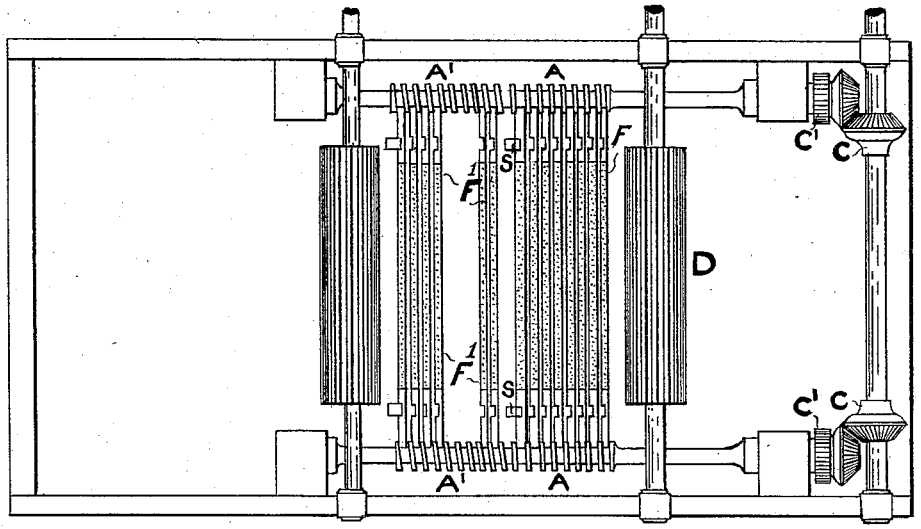

FIG. 2.

Witnesses.

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Robert Everett.

Inventors.
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By James L. Norris.
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(No Model.) 3 Sheets—Sheet 2.

A. SMITH & H. W. WHITEHEAD.

SCREW GILL DRAWING MACHINERY.

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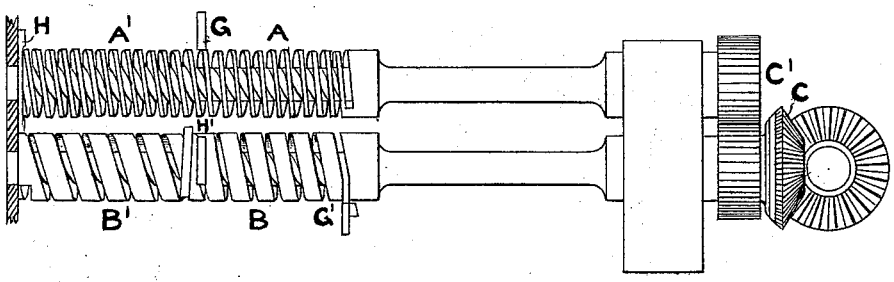

FIG. 3.

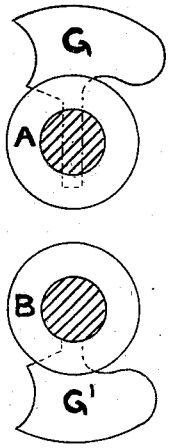

FIG. 4.

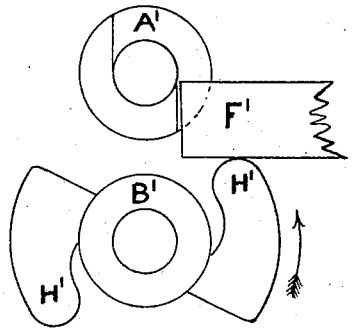

FIG. 5.

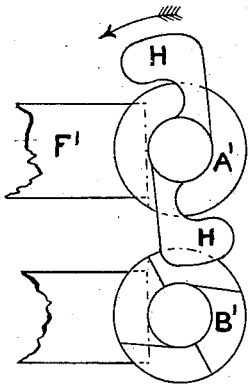

FIG. 6.

Witnesses

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(No Model.) 3 Sheets—Sheet 3.

A. SMITH & H. W. WHITEHEAD.

SCREW GILL DRAWING MACHINERY.

No. 347,655. Patented Aug. 17, 1886.

FIG. 7.

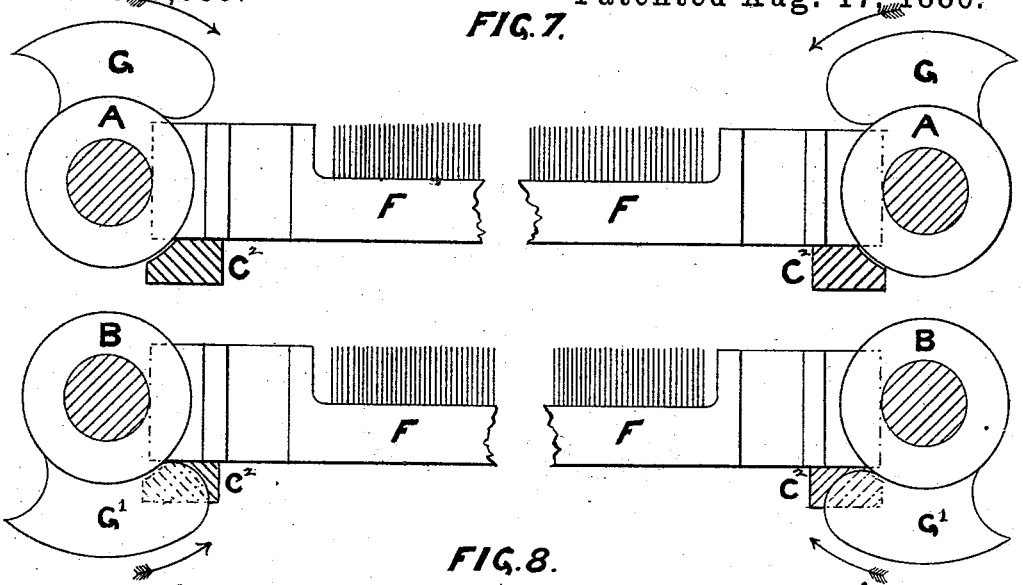

FIG. 8.

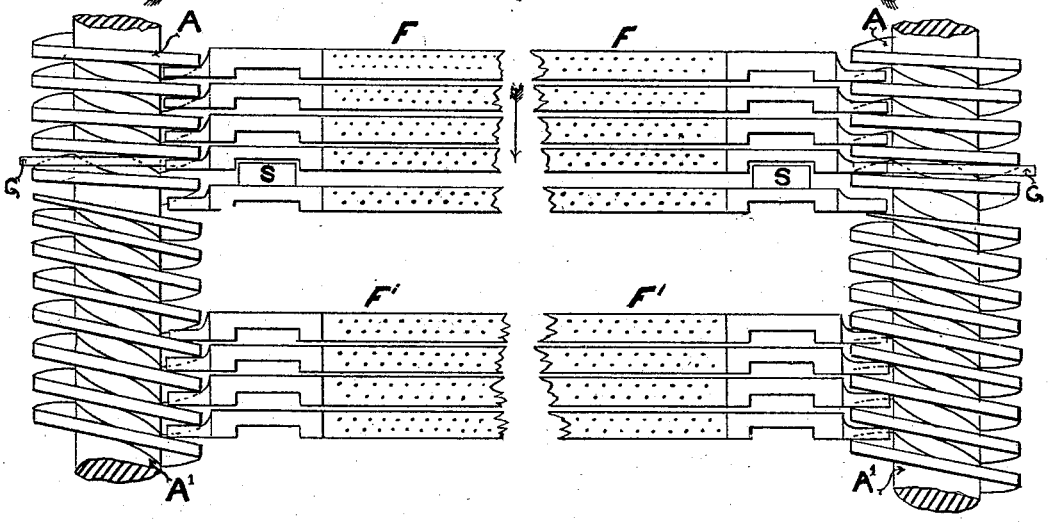

FIG. 9.

FIG. 10.

Witnesses.
J. A. Rutherford
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UNITED STATES PATENT OFFICE.

ALBERT SMITH, OF BRADFORD, AND HENRY WALTON WHITEHEAD, OF LEEDS, COUNTY OF YORK, ENGLAND.

SCREW-GILL DRAWING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 347,655, dated August 17, 1886.

Application filed November 12, 1885. Serial No. 182,607. (No model.)

To all whom it may concern:

Be it known that we, ALBERT SMITH and HENRY WALTON WHITEHEAD, subjects of the Queen of Great Britain and Ireland, and residing, respectively, at Bradford and Leeds, both in the county of York, England, have invented certain Improvements in Screw-Gill Drawing Machinery, of which the following is a specification.

The object of this invention is to more clearly draw and straighten the sliver and lay the fibers parallel with each other preparatory to combing, drawing, roving, or spinning; and the invention consists in the construction and combination of parts hereinafter particularly described and claimed.

In the accompanying drawings, Figure 1 represents the sectional elevation of such portions of a gill or preparing box as are required to make clear our invention. Fig. 2 is a sectional plan of the same. Fig. 3 is a view of the screws drawn to an enlarged scale; and Figs. 4, 5, and 6, end views of the screws, showing the cams for the raising and lowering of the fallers. Fig. 7 represents an enlarged section through the single-threaded screws A and B, showing the fallers in position and the cams for raising and lowering the fallers. Fig. 8 is a plan of a portion of both the single and double threads; and Figs. 9 and 10 are end views of the fallers, showing the angle of the portion at the ends that travel in the screw-spaces.

The gill or preparing box is of the ordinary construction and actuated in the usual manner; but instead of having the screws the same pitch throughout for traversing the fallers, or having four separate screws driven from each end by gearing, we make each of the top screws, A and A′, in one piece, and each of the bottom screws, B and B′, for returning the fallers in one piece also, and drive the same by the bevel and spur wheels C and C′ in the same manner as when the machine is fitted with screws of the same pitch throughout. One portion of the top and bottom screws next to the feed-rollers D are cut with single threads for traveling the fallers; but the remainder of the screws are cut with double or more pitched threads, the thickness of the single and double threads, however, being the same, so as to keep the fallers of each set the same distance apart, which causes the fallers to travel quicker through the fiber, and thereby straighten the same more thoroughly and make the sliver more even than when the fallers are at varying distances apart. The fiber is fed by the feed-rollers D to the first set of fallers, F, which pass through the fiber in the ordinary manner as far as the ordinary stops S; but on the fiber coming to the second set of fallers, F′, traversed by the double-pitched screws A′, they pass through the fiber at double the speed of the fallers F, thereby obtaining double the amount of "draft," which more thoroughly straightens the fiber and enables us to manipulate the same with fewer machines than when operated upon in the ordinary manner. The single-pitched screws A and B are provided with single cams G and G′, the cams G being at the termination of the single threads or screws A, for the purpose of lowering the fallers F, and cams G′ for raising them from the bottom to the top screw, A, as in ordinary machines. The double-pitched screws are provided with double cams H and H′, the cams H lowering the fallers F′ to the bottom screws and cams H′ raising them from the bottom to the top, the ends of the threads for receiving them being prepared in the same manner as in single-threaded screws. In case treble-threaded screws are used, each screw or thread is provided with a cam for operating the fallers, thus insuring their keeping in their respective threads. The fallers F are of the ordinary construction supported by the bars C^2, extending almost the entire length of each portion of the screw, space being left at each end for the fallers to pass from one screw to the other.

On putting the machine in motion the screws A and B revolve, causing the fallers F to travel in the direction indicated by the arrow until they reach the upright stop-bars S, at the end of the single-threaded screws, where they are operated upon by cams G, and thereby lowered to the bottom screw, B, by which they are carried back to the opposite end of the screw and again raised by cams G′ to the top screw, A. Thus by these means the fallers F are continually rising and falling and passing through the fiber.

The traveling, raising, and lowering of the fallers F′, operated by the double-threaded screws

A′ and B′, are attained in the same manner as those operated by the single-threaded screws, except there are more cams in the circumference of the screw, a cam being provided for each thread of the screw. Each end of the fallers at F^2 is cut at an angle corresponding to the incline or pitch of the screw in which they are to work.

We are aware of English Patent No. 11,952 of 1847, and lay no claim to anything therein shown. In said patent is presented substantially the same general construction as in the present case, but the screw-threads are of different thicknesses, while in our construction they are of the same thickness, as specified in the following claim.

What we claim is—

The combination, with the two sets of fallers FF′ and the cams for operating the same, of the top screws, each made in one piece and formed with single threads A and double threads A′ of the same thickness, the bottom screws, each made in one piece and formed with the single threads B and double threads B′ of the same thickness, and gearing C C′, for operating said several screws, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ALBT. SMITH.
HENRY WALTON WHITEHEAD.

Witnesses:
JOHN GILL,
RD. B. NICHOLLS.