No. 867,026. PATENTED SEPT. 24, 1907.

G. H. ELLIS.

SYSTEM OF MACHINES FOR TREATING FLAX STRAW.

APPLICATION FILED MAY 1, 1907.

2 SHEETS—SHEET 1.

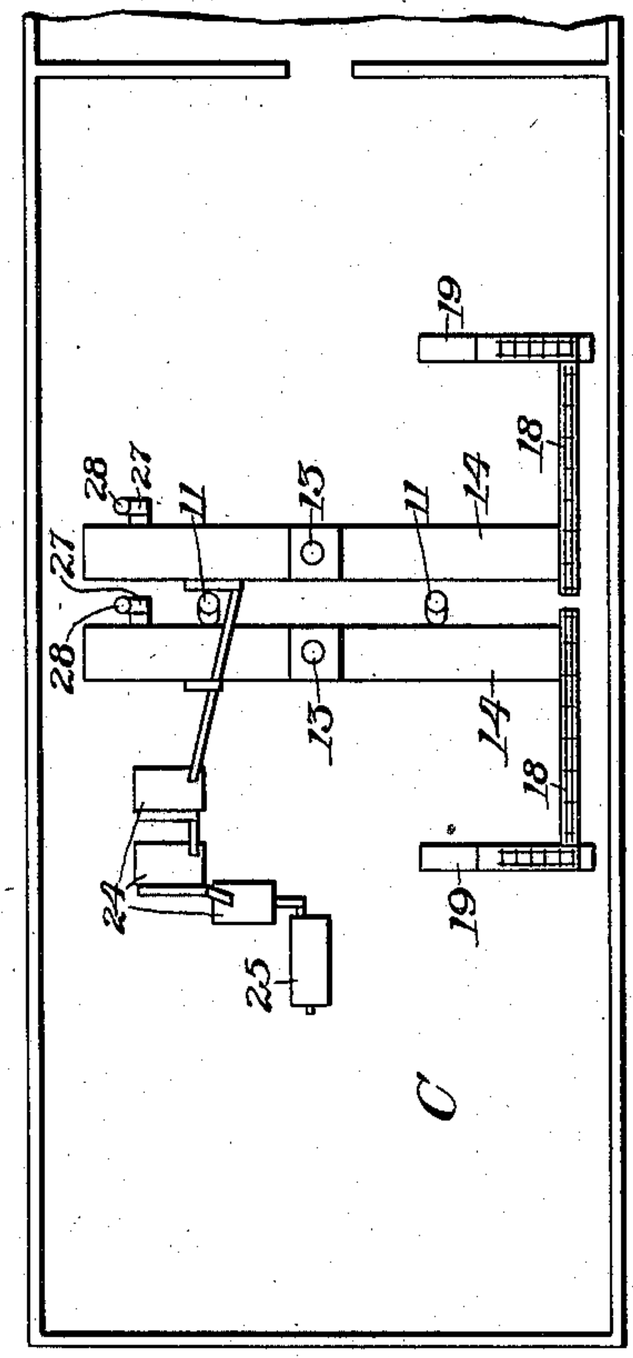

Fig. 4.

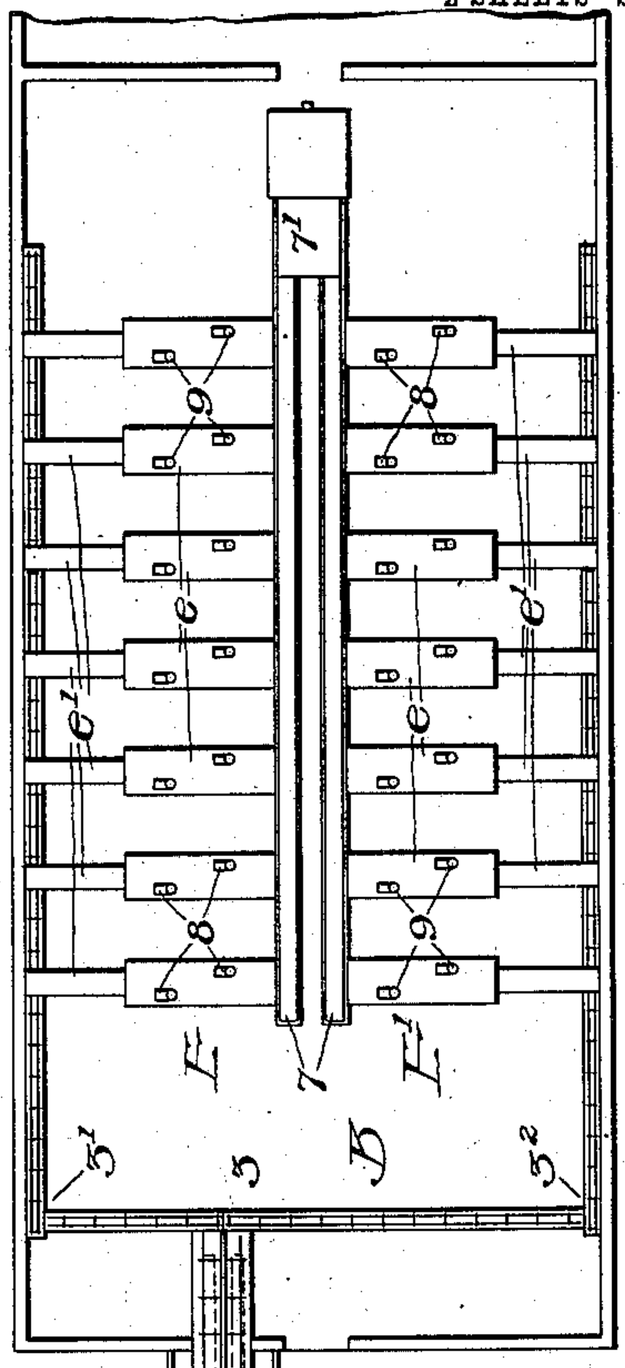

Fig. 1.

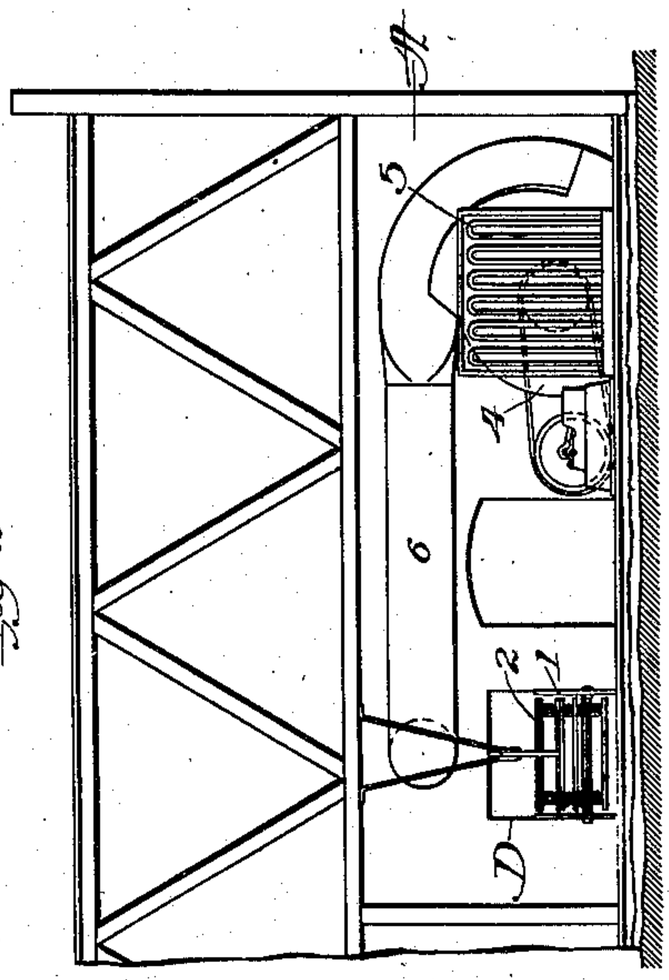

Fig. 2.

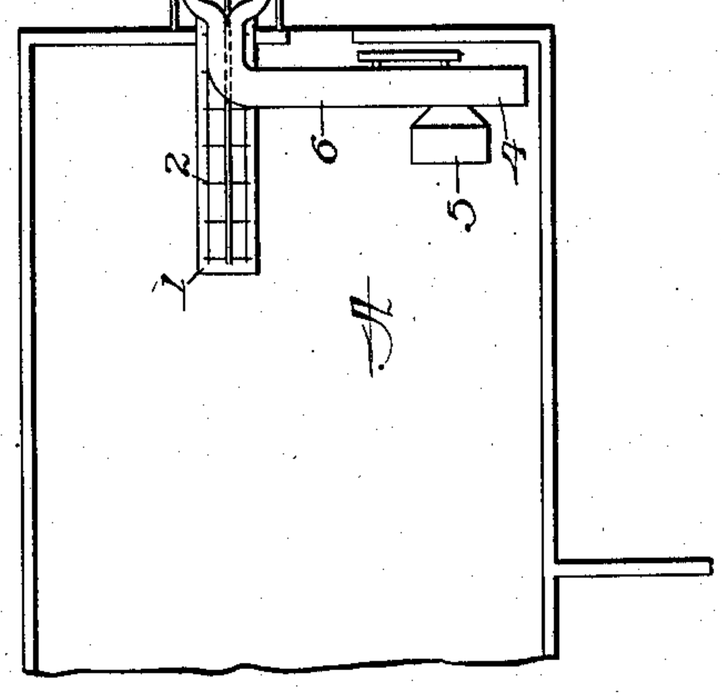

Fig. 3.

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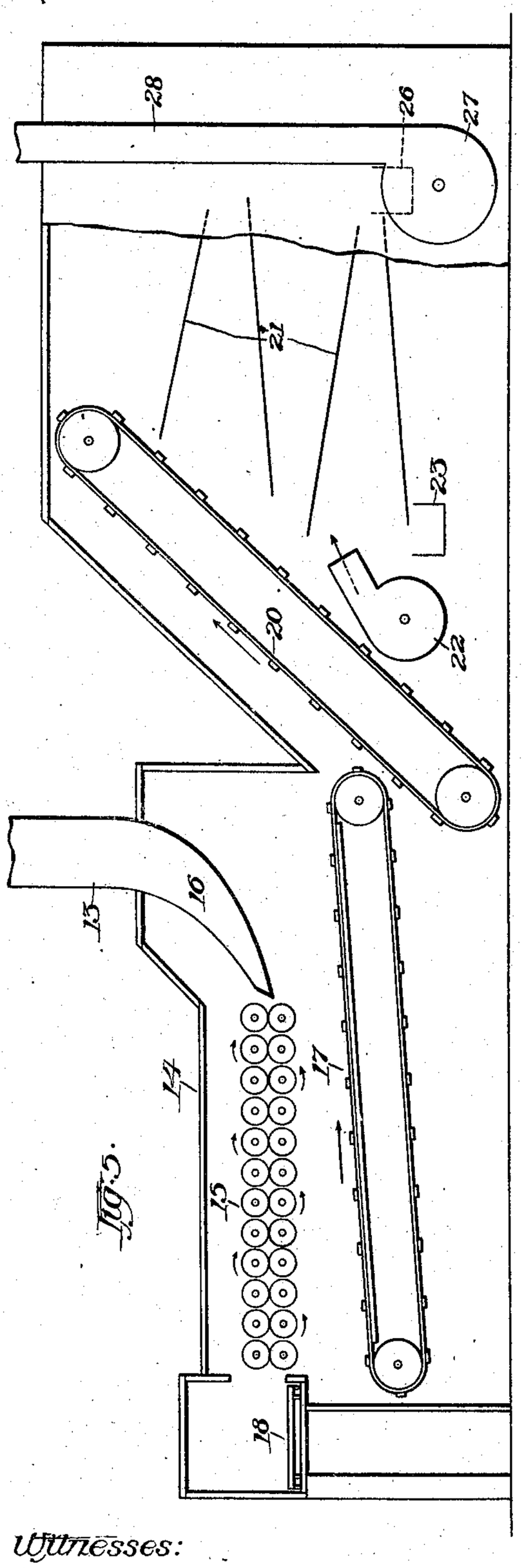

Fig. 5.

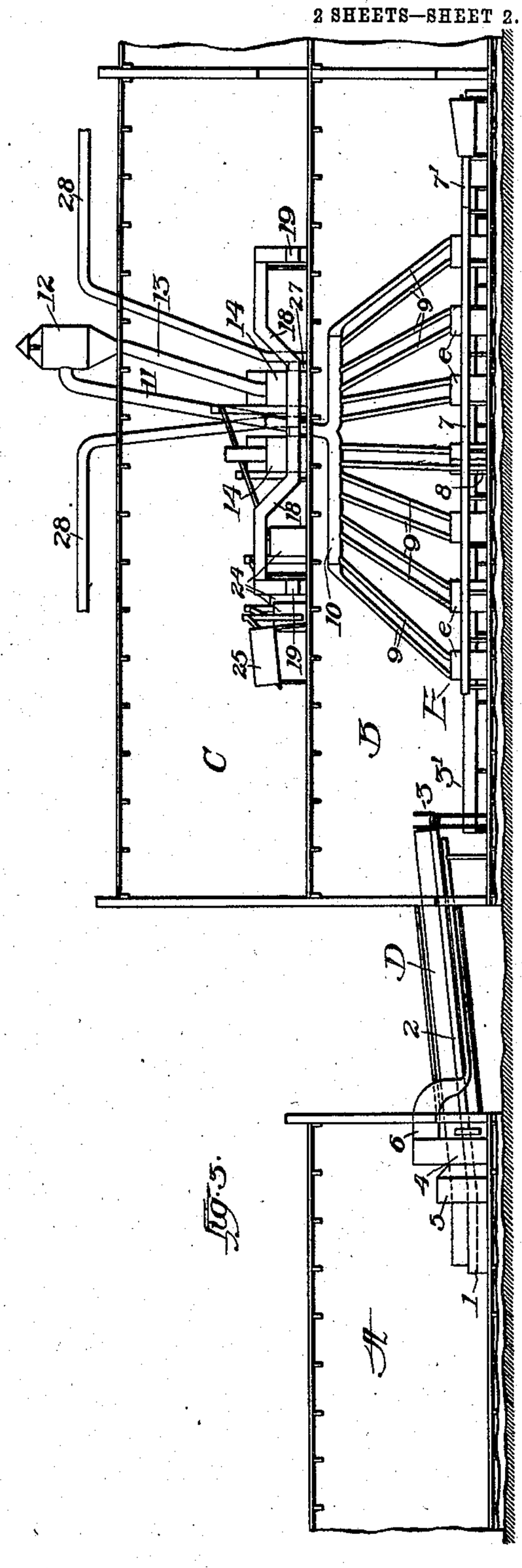

Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE H. ELLIS, OF ST. PAUL, MINNESOTA, ASSIGNOR TO INTERNATIONAL FLAX TWINE COMPANY, A CORPORATION OF MINNESOTA.

SYSTEM OF MACHINES FOR TREATING FLAX-STRAW.

No. 867,026. Specification of Letters Patent. Patented Sept. 24, 1907.

Application filed May 1, 1907. Serial No. 371,223.

To all whom it may concern:

Be it known that I, GEORGE H. ELLIS, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Improvement in a System of Machines for Treating Flax-Straw, of which the following is a complete specification.

This invention relates to an improved arrangement of a series of machines designed to treat flax straw, including the drying of the straw, when desirable or necessary, the breaking of same and formation of a special sliver therefrom, and the simultaneous removal and, preferably, simultaneous treatment of that portion of the straw which has been removed by the brake.

The object in view is to provide a simple and improved system and arrangement of machines for treating flax straw whereby the operation of converting the straw into fiber and tow, the cleaning of the seed and the proper disposition of the waste products is made continuous and uninterrupted throughout the various stages of treatment. The operation is thus simplified and facilitated, the quality and uniformity of the product is improved and the capacity much increased.

The several machines employed to carry into effect the present invention, and the relative arrangement of same, are illustrated diagrammatically in the accompanying drawings, in which—

Figure 1 represents a plan of the system of machines, which are situated on the first floor of the building. Fig. 2 is a front elevation of the fan, heating coils, conveyer and drying chamber. Fig. 3 is a longitudinal side elevation showing the complete system of machines, the walls and floors of the building being shown in outline as in the preceding figures. Fig. 4 shows a plan of the tow brakes and seed cleaners, which are located on the second floor, as seen in Fig. 3; and Fig. 5 is a longitudinal sectional elevation showing diagrammatically the tow breaking machine.

Referring to the drawings, A designates the opening room, B the brake room and C the seed cleaning and tow brake room.

Between the rooms A and B, which in this instance are somewhat separated, and forming a passageway therebetween, is the drying chamber D. At the mouth of this passageway is located the feed table 1, and extending over this table and through the drying chamber D is an endless conveyer 2, adapted to carry the straw, when placed upon the said table, through the drying chamber and deposit it on the continuously moving, endless conveyer 3.

The drying chamber D is heated by means of the fan 4, which drives a blast of air over the steam heated coils 5, through the air conduit 6, and into the forward end of the heating chamber.

The bundles of flax straw, unthreshed, are placed upon the table 1 by the operator and are preferably set upon their butts. They are carried by the endless conveyer 2 through the drying chamber D, the moisture thereby being practically all driven out of the straw, or its condition with respect to moisture, at least, rendered substantially uniform. After having passed through the chamber D the straw is delivered upon the endless conveyer 3. In its relation to the brakes this may be regarded as the primary conveyer, and its function is to deliver the material to the brakes. The brakes are arranged in parallel and in two sets or series E and E^1, consisting of the individual brakes *e*. These brakes, as before stated, are shown only diagrammatically, and are preferably of the type shown in the United States Patent which issued to me July 11, 1905, No. 794,284.

The conveyer 3 is divided into two branches 3^1 and 3^2, which convey the straw to the two sets or series of brakes E and E^1 respectively. Each one of the brakes *e* is provided with a feed table e^1, upon which the material is transferred from the conveyers 3^1 and 3^2. The straw is delivered by said conveyer 3 in the form of a continuous swath, or swaths, to the brakes, and the brakes operate to subdivide this swath, to break it, separating the fiber from the refuse, the refuse in the brakes consisting of the hurds, seed, loose straw, etc. The fiber is delivered from the brakes in the form of a plurality of fiber swaths, or slivers, which are received by the two fiber conveyers 7, these conveyers preferably uniting at their delivery end and forming the two slivers into a single sliver on the conveyer 7^1, which passes it on to drawing frames, and ultimately to the spinners, these last not being shown as they form no part of the system disclosed herein.

It is obvious that the two sets, or series, E and E^1 of brakes *e* might equally as well be placed all side by side, and a single primary conveyer 3 be made to carry the material to them. For convenience, however, and to secure a more compact arrangement of machines, the brakes are disposed as shown. By subdividing the swath of straw on the conveyer 3 and passing it through a plurality of brakes, and then re-uniting the resulting slivers as they are delivered therefrom, a combined sliver of very even and uniform quality is produced.

The refuse before referred to, consisting of the shives, seed, loose straw, etc., and which is taken out of the straw by the brakes, is taken by pneumatic conveyers to the tow-brakes and the seed cleaning devices on the second floor. The pneumatic conveyer for each set or series E or E^1 of brakes, consists of the fans 8, mounted on the brakes *e*, the ducts 9 leading to the trunk duct 10, and the duct 11 leading from said trunk duct to the cyclone 12 on top of the building. The conduits 13 return the material from the cyclone to the tow-brakes

14, which are snown in detail diagrammatically in Fig. 5. In this figure 15 designates a series of fluted braking rolls and 16 the throat leading from the conduit 13 to said rolls. The refuse passing through these rolls 15 is broken up finer, the seed, hurds and fine material dropping down upon the carrier 17, while the tow resulting from the loose straw broken therein is delivered upon the carrier 18. Two of these tow machines are shown, and both deliver the tow which they make upon such carriers 18, which convey and feed it to the baling presses 19, where it is baled ready for shipment. On being discharged from the conveyer 17 the seed and other fine stuff is elevated by the carrier 20 from the discharge end of which it is made to pass through a series of riddles, or screens, 21, everything but the seed being blown away by means of the fan 22. From the last, or lower, screen the seed falls into the trough 23, which conducts it to the series of seed cleaning devices 24, and last to the grader 25. The chaff and other material blown from the seed lodges in the trough 26, from which point it is taken by the fan 27 and driven through the ducts 28 to the furnaces or elsewhere.

What I claim as my invention and desire to secure by Letters Patent, is:

1. A system of machines for treating flax straw, comprising a primary conveyer, a plurality of brakes adapted to receive the material from said primary conveyer, and a fiber conveyer arranged to receive and form into a single sliver the plurality of slivers delivered from the several brakes, substantially as described.

2. A system of machines for treating flax straw comprising a primary conveyer, two sets or series of brakes adapted to receive the material therefrom, to break it and deliver same in the form of a plurality of slivers upon two conveyers, and two fiber conveyers, which unite and form a single sliver of the plurality of slivers delivered therefrom, substantialy as described.

3. A system of machines for treating flax straw comprising a primary conveyer, said conveyer consisting of two oppositely moving branches leading from the discharge end of the first mentioned conveyer, two sets or series of brakes adapted to receive the material therefrom, break it and deliver same in the form of a plurality of slivers, and a fiber conveyer arranged to receive and form into a single sliver the plurality of slivers delivered from said brakes, substantially as described.

4. A system of machines for treating flax straw comprising a continuously moving conveyer on which the material is delivered in a single continuous swath, means adapted to receive, break and subdivide said material into a plurality of fiber swaths or slivers, and a conveyer for gathering and reuniting said fiber swaths or slivers into a single fiber swath or sliver, substantially as described.

5. A system of machines for treating flax straw comprising a continuously moving conveyer on which the unthreshed flax straw is delivered in a single continuous swath, a plurality of brakes adapted to receive the material from the said conveyer and convert it into a sliver and a refuse, a second conveyer for receiving the plurality of slivers from the brakes and for forming them into a single sliver, and means for simultaneously receiving said refuse from the brakes and for separating same into tow, seed and waste products, substantially as described.

6. A system of machines for treating flax straw comprising a continuously moving conveyer on which the material is delivered, a plurality of brakes adapted to receive the material from the said conveyer and convert it into a sliver and a refuse, conveyers for receiving the plurality of slivers from the brakes, and means for simultaneously receiving said refuse from the brakes and for separating same into tow, seed and waste products, said means comprising pneumatic conveyers, a tow brake and seed cleaners.

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Witnesses:
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