

(No Model.)

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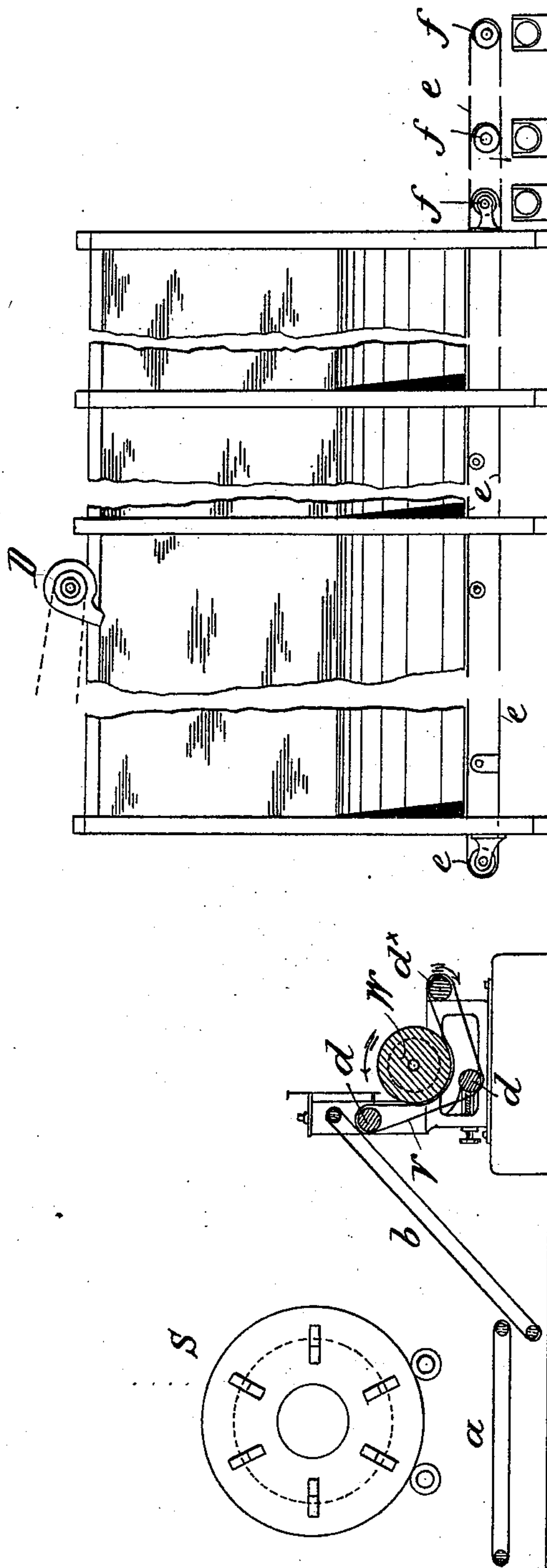
L. PIETTE.

APPARATUS FOR SORTING AND SEPARATING PIECES OF WOOD FOR
MANUFACTURE OF CELLULOSE.

No. 539,296.

Patented May 14, 1895.

Fig. 1.



Witnesses:
J. C. Williams
Rey C. Bowen

Inventor:
Ludwig Piette
By *Whitman & Wilkinson*
Attorneys.

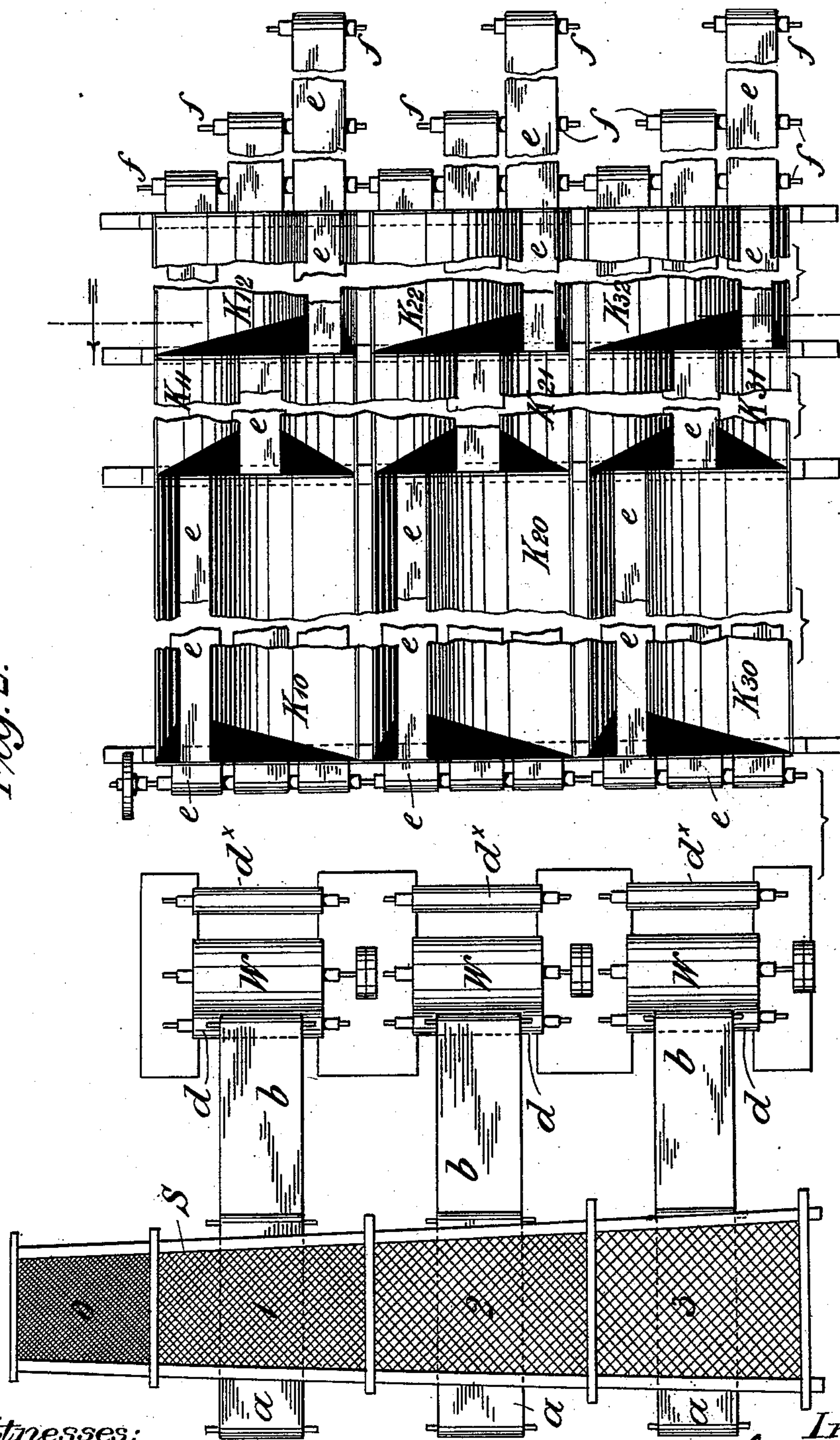
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Fig. 2.



Witnesses:
J. H. Wilson
Wm. C. Bowen

Inventor:
Ludwig Piette
By *Whitman & Wilkinson*,
Attorneys.

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3 Sheets—Sheet 3.

L. PIETTE.
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Fig. 3.

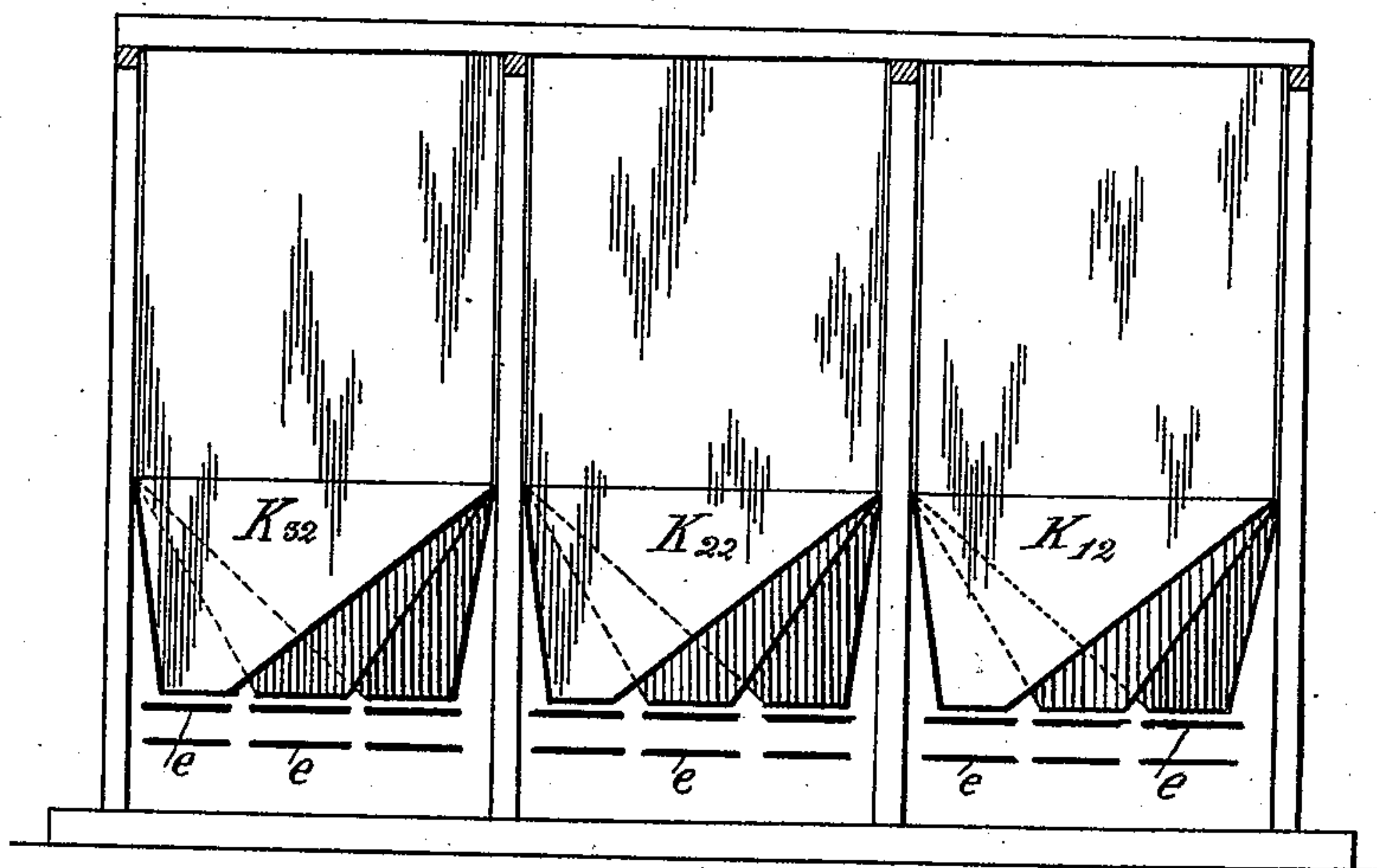
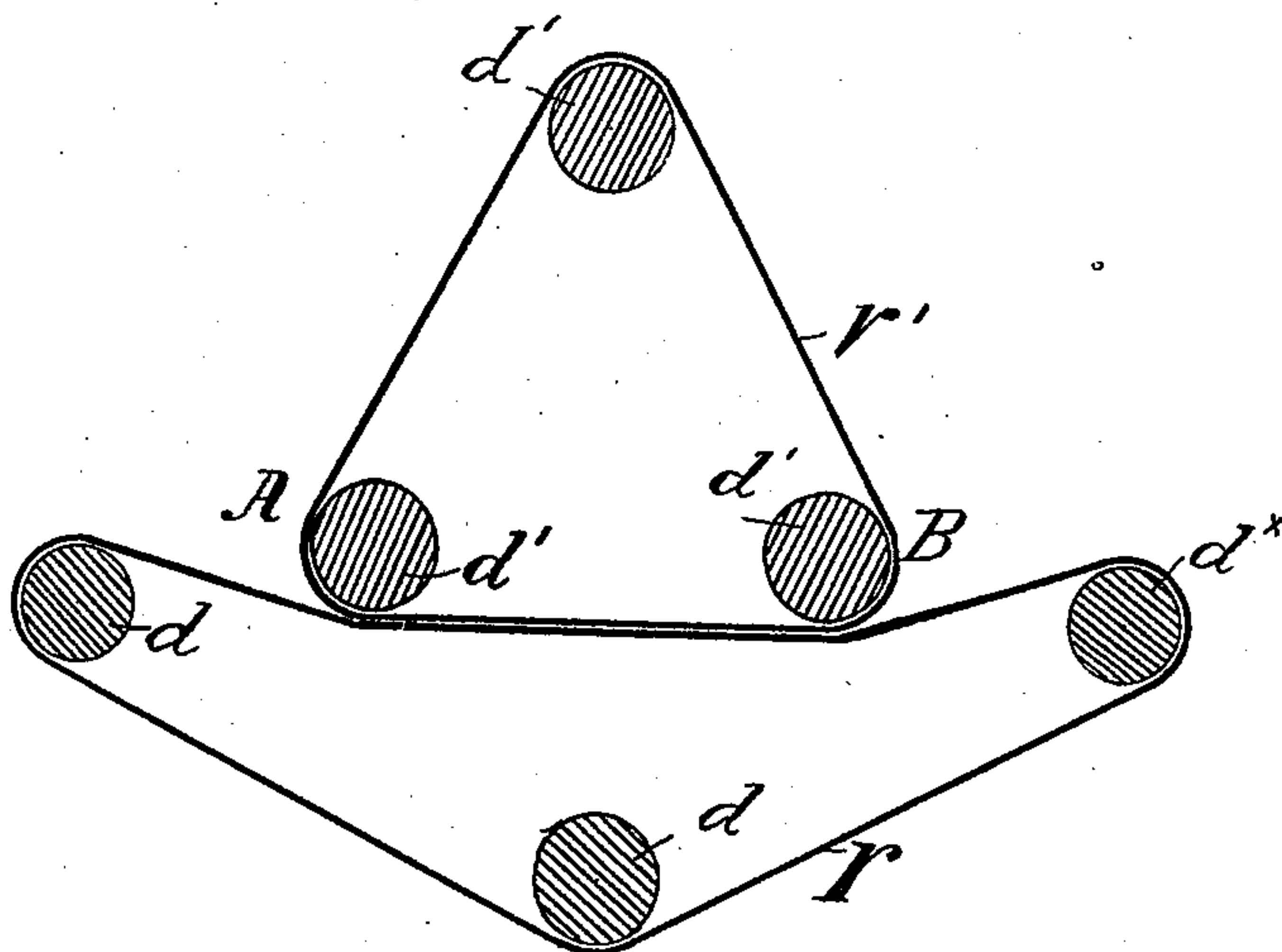


Fig. 4.



Witnesses:

J. H. Wilson
Ernest C. Bowen

Inventor:

Ludwig Piette

By *Whitman & Wilkinson*,
Attorneys.

UNITED STATES PATENT OFFICE.

LUDWIG PIETTE, OF PILSEN, AUSTRIA-HUNGARY.

APPARATUS FOR SORTING AND SEPARATING PIECES OF WOOD FOR MANUFACTURE OF CELLULOSE.

SPECIFICATION forming part of Letters Patent No. 539,296, dated May 14, 1895.

Application filed January 12, 1895. Serial No. 534,673. (No model.)

To all whom it may concern:

Be it known that I, LUDWIG PIETTE, a subject of the Emperor of Austria-Hungary, and a resident of Pilsen, Bohemia, Austria-Hungary, have invented certain new and useful Improvements in Apparatus for Sorting and Separating Pieces of Wood for the Manufacture of Cellulose, of which the following is a specification.

My invention relates to apparatus for sorting pieces of wood to be used in the manufacture of cellulose.

Such pieces of wood being approximately of equal size are sorted according to their density so that the denser knotty pieces and the pieces of trunk wood immediately surrounding knots and which are unsuitable for the manufacture of cellulose will be separated from the good pieces which are less dense. The method which I use for this purpose consists in throwing the pieces of wood at a considerable initial velocity through the air, the latter being perfectly immovable or moved at a small velocity in the opposite direction to that of the throw. As the pieces of wood are of equal size and thus meet with the same resistance of air during the throw, while the momentum of the less dense pieces which are suitable is smaller than that of the denser pieces which are unsuitable, the length of throw will be less with the former than with the latter pieces, so that they will be separated from each other according to their density and suitability and that the selection of the knotty pieces by hand is completely or almost entirely obviated. This method differs essentially from that in which a current of air passes in the direction of the throw between the pieces thrown and in which the length of throw must be the greater the less the density of the pieces. By the latter method a sufficiently accurate separation of the pieces cannot be achieved.

In the accompanying drawings I have represented an apparatus designed for carrying the aforesaid method into practice.

Figure 1 is an elevation of the apparatus partly in section. Fig. 2 is a plan of the same. Fig. 3 shows an end view of the troughs for the reception of the sorted pieces of wood. Fig. 4 represents a modification of the throwing apparatus.

The appropriately reduced material is first introduced into one of the well known apparatus which separates it according to size. In the drawings I have shown a revolving sieve *S* whose part *O* allows the passage of the smallest chips and splinters which are not suitable and which are carried away separately, while at the other end the coarsest pieces fall out which are not suitable either. From the parts 1, 2, 3 of the revolving sieve the suitable pieces of wood, being sorted according to size, pass on to endless aprons *a* and thence separately upon endless aprons *b* to the throwing apparatus. This apparatus consists of a roller *W* turned at a great speed and which is in contact with and drives an endless apron *V* conducted over guide rollers *d* and *d'*. The wood falls from the endless apron or conveyer *b* between the roller *W* and the endless apron *V* and is thus carried away and acquires a great velocity. The roller *W* may be replaced by an endless apron *V'* which passes over guide rollers *d'* (Fig. 4) one of which is turned at a great velocity. At the great velocity thus obtained the pieces of wood are thrown beyond the guide roller *d'* and fall into troughs *K*¹⁰, *K*²⁰, *K*³⁰; *K*¹¹, *K*²¹, *K*³¹; *K*¹², *K*²², *K*³² whose bottoms are formed by endless aprons *e e e*—which are set in motion in the longitudinal direction by rollers *f f f* and convey the wood from the troughs to suitable receptacles. Not shown. Now as the length of throw of the pieces of wood is the shorter the less their density, the least dense pieces suitable for the production of pure cellulose will fall into the troughs *K*¹⁰ *K*²⁰ *K*³⁰ situated nearest to the rollers *d'*, and pieces suitable for the production of inferior kinds of cellulose will fall into the troughs *K*¹¹ *K*²¹ *K*³¹ which pieces may if desired be further sorted by hand or by throwing them again in the described manner, while the troughs *K*¹², *K*²² *K*³² receive only knotty pieces or dense trunk wood surrounding knots, which are not suitable for the manufacture of cellulose.

The separation may if desired be facilitated by a gentle current of air passed in the opposite direction to that of the pieces thrown this current being produced by blowers *D* arranged above the troughs.

In order to permit of the separate discharge of the sorted pieces, the bottoms of the troughs

K^{10} , K^{11} , K^{12} ; K^{20} , K^{21} , K^{22} ; K^{30} , K^{31} , K^{32} following each other in the longitudinal direction are alternated in the transverse direction as shown.

5 I claim—

1. In an apparatus of the character described, the combination with means for assorting and separating the pieces of wood according to size; of the devices for throwing
10 the pieces of wood previously assorted as to size and assorting them according to weight and density, the said throwing devices each consisting of a loose endless apron V running on three rollers arranged in a triangular form,
15 and mechanism for driving said apron V and for throwing said pieces of wood by centrifugal force off from said apron revolving in contact therewith; a plurality of conveyers adapted to receive the pieces of wood previously
20 assorted as to size and to deliver said pieces between said apron V and said driving mechanism; and a plurality of receptacles arranged at varying distances from said throwing devices and adapted to catch and separate the pieces of wood of different grades
25 of weight and density, substantially as described.

2. In an apparatus of the character described, the combination with means for assorting and separating the pieces of wood according to size; of the devices for throwing
30 the pieces of wood previously assorted as to size and assorting them according to weight and density, the said throwing devices each consisting of a loose endless apron V running on three rollers arranged in a triangular form, and a rapidly revolving roller W revolving in contact with said endless apron V and adapted
35 to throw the said pieces of wood by centrifugal force from said apron V into receptacles provided therefor; a plurality of conveyers adapted to receive the pieces of wood previously assorted as to size, and to deliver the same to the said throwing devices between
40 said apron V and said roller W; and a plurality of receptacles arranged at varying distances from said throwing devices and adapted to catch and separate the pieces of wood of different grades of weight and density, substantially as described.
45

3. In an apparatus of the character described, the combination with means for assorting and separating the pieces of wood according to size; of the devices for throwing
50 the pieces of wood previously assorted as to

size, and assorting them according to density, the said throwing devices each consisting of a loose endless apron V running on three rollers arranged in a triangular form, and mechanism revolving in contact therewith for driving said apron V and for throwing said pieces
60 of wood by centrifugal force off from said apron; a plurality of conveyers adapted to receive the pieces of wood previously assorted as to size and to deliver said pieces between
65 said apron V and said driving mechanism; the hoppers K^{10} , K^{20} and K^{30} adapted to receive the lightest pieces of wood; the hoppers K^{11} , K^{21} , and K^{31} adapted to receive heavier pieces; and the hoppers K^{12} , K^{22} , and K^{32}
70 adapted to receive the heaviest pieces; an opening provided in the bottom of each hopper for the discharge of the contents thereof; and an endless apron or conveyer beneath said opening adapted to carry off the assorted
75 pieces of wood, substantially as described.

4. In an apparatus of the character described, the combination with means for assorting and separating the pieces of wood according to size; of the devices for throwing the
80 pieces of wood previously assorted as to size, and assorting them according to weight and density, the said throwing devices each consisting of a loose endless apron V running on three rollers arranged in a triangular form,
85 and a rapidly revolving roller W revolving in contact with said endless apron V and adapted to throw the said pieces of wood by centrifugal force from said apron V into receptacles provided therefor; a plurality of conveyers adapted
90 to receive the pieces of wood previously assorted as to size, and to deliver said pieces between said apron V and said driving mechanism; the hoppers K^{10} , K^{20} and K^{30} adapted to receive the lightest pieces of wood; the hoppers
95 K^{11} , K^{21} and K^{31} adapted to receive heavier pieces; and the hoppers K^{12} , K^{22} , and K^{32} adapted to receive the heaviest pieces as they are thrown; an opening provided in the bottom of each hopper for the discharge of the contents
100 thereof; and an endless apron or conveyer beneath said opening adapted to carry off the assorted pieces of wood, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

LUDWIG PIETTE.

Witnesses:

ADOLPH FISCHER,
CARL FISCHER.