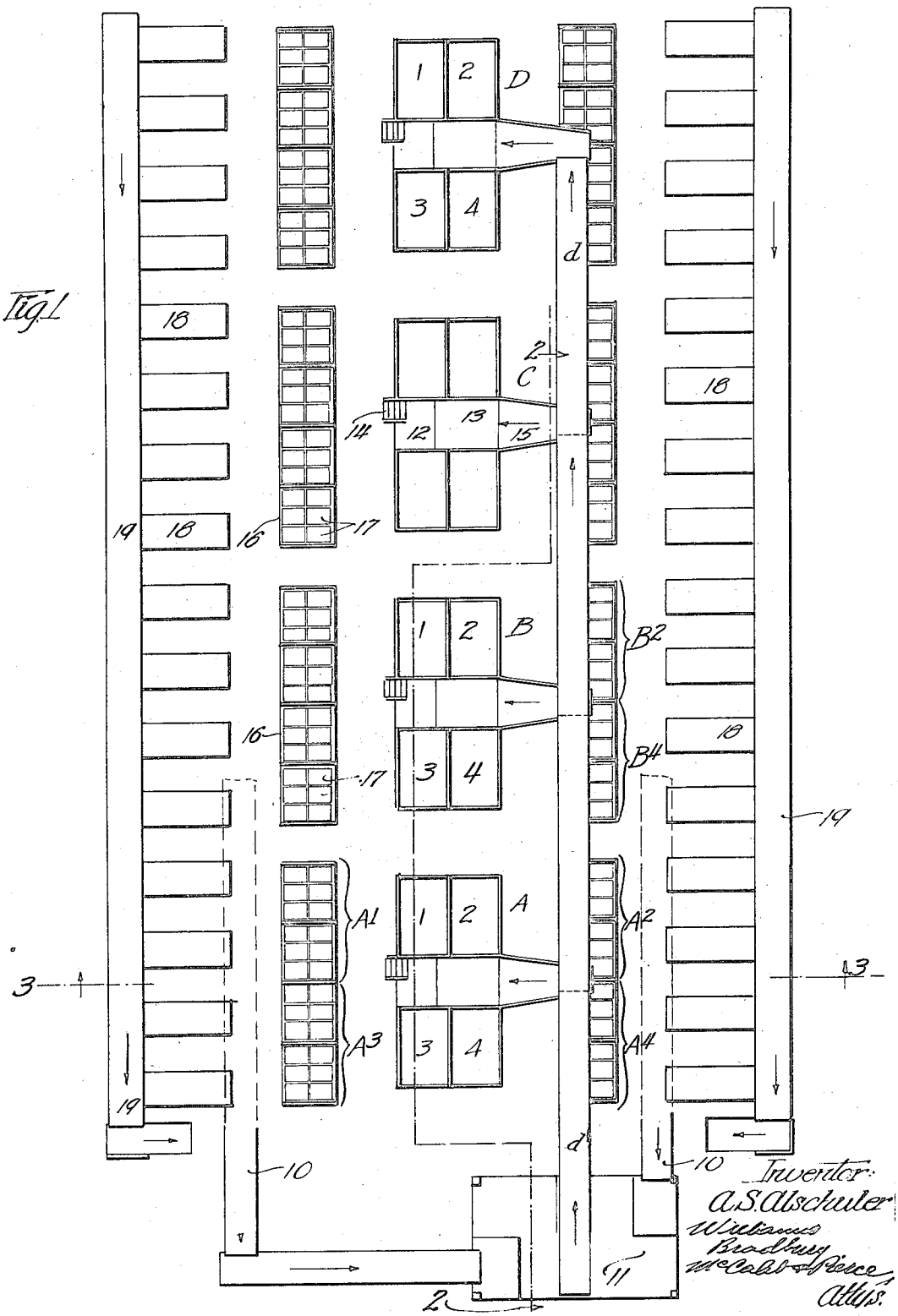
Dec. 26, 1922. 1,440,204

A. S. ALSCHULER.

METHOD OF DISTRIBUTING AND SORTING MERCHANDISE.

FILED OCT. 3, 1921. 3 SHEETS-SHEET 1

Fig. 1



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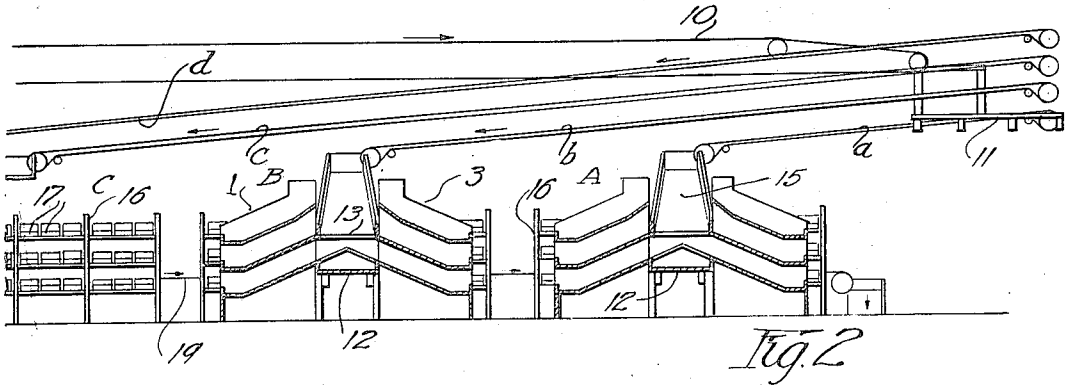


Fig. 2

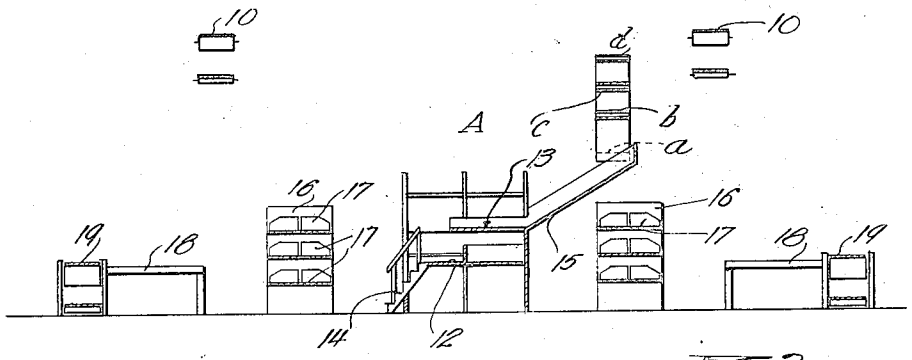


Fig. 3

B	4	10 20	310

ORDER NO. 73654

PCS. 5

CATALOG NO. H6570½

QUANTITY 11½ yds.

DESCR. White Poplin

ORDER CLK.	SHIP. CLK.
71	16

Fig. 4

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Fig. 6

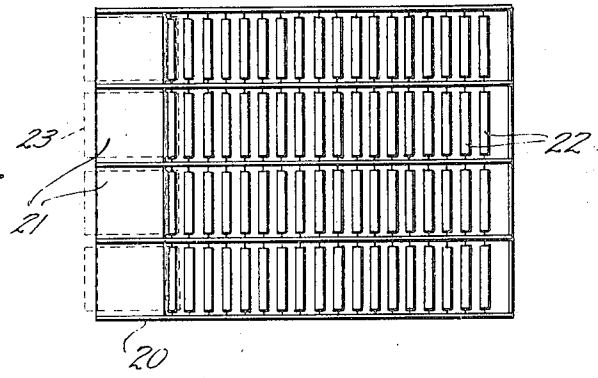
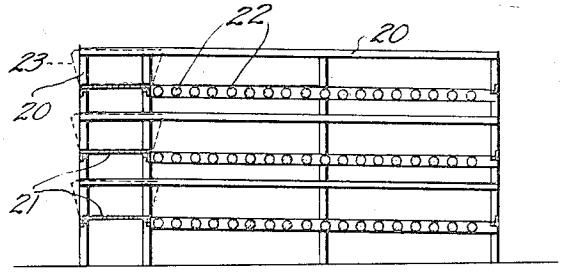


Fig. 5



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Patented Dec. 26, 1922. 1,440,204

UNITED STATES PATENT OFFICE.

ALFRED S. ALSCHULER, OF CHICAGO, ILLINOIS, ASSIGNOR TO R. H. ALSCHULER, OF WINNETKA, ILLINOIS.

METHOD OF DISTRIBUTING AND SORTING MERCHANDISE.

Application filed October 3, 1921. Serial No. 505,008.

To all whom it may concern:

Be it known that I, ALFRED S. ALSCHULER, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Methods of Distributing and Sorting Merchandise, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a method of distributing and sorting merchandise, and contemplates the provision of a method or system that will fulfill the requirements of mail order houses.

A very large percentage of the orders received by the ordinary mail order house consist of a plurality of items or group of items, furnished from as many different stock rooms. Before shipment of any order can be made, the various items constituting the order must be assembled at a definite point for checking and preparation for shipment. It is customary and desirable to have each order scheduled for assembly and packing at a definite time. Adherence to a time schedule in the preparation of orders for shipment is greatly facilitated when the method of my invention is employed.

A salient feature of my invention is "section and time sorting" effected at points in proximity to suitable receptacles in which complete orders are assembled and checked prior to preparation for shipment. This section and time sorting is effected by a single volitional act with respect to each item, and is preferably facilitated by using bin units or "sorting stations" of a type presently to be described. The assembly receptacles are arranged in sections, there being a plurality of such sections located adjacent to each sorting station. The employee or employees, in charge of each sorting station, by one handling of each item, delivers each of the items which go into the station into one of a plurality of receptacles forming part of the sorting station. Delivery of any item into any one of these receptacles has a double significance. It determines the section of assembly receptacles in which the item is to be assembled with other items of the same order, and likewise determines the time at which said item is to be assembled with other items of the same order. I believe it is broadly new with me to devise a method wherein the several items of each order, by a single act with respect to each item, are sorted, at points adjacent to assembly receptacles, both with respect to a section of assembly receptacles in which the several items are to be assembled and checked, and with respect to the times at which they are thus to be assembled and checked.

Other features and advantages of my improved method will appear as this specification progresses.

In the accompanying drawings

Figure 1 is a more or less diagrammatic plan view of an assembly room equipped with certain apparatus which is preferably employed in carrying my method into effect;

Figure 2 is a vertical section taken on line 2—2 of Figure 1;

Figure 3 is a vertical section taken on line 3—3 of Figure 1;

Figure 4 illustrates the nature of the indicia which is carried by each package constituting an item to be handled in accordance with my improved method;

Figure 5 is a longitudinal vertical sectional view of a modified style of sorting station, and

Figure 6 is a plan view of same.

I shall first refer to Figure 1. An equipment suitable for my purpose preferably comprises devices such as belt conveyors, chutes, trucks, or the like, for conveying articles of merchandise from the stock rooms to a point where such articles may be readily delivered to belt conveyors, or the like, which lead to the stations where time and section sorting is accomplished in the manner presently to be explained. Diagrammatically illustrated belt conveyors 10—10 are representative of means for carrying articles of merchandise from the stock rooms (not shown) to a platform or balcony 11. In some installations, I find it convenient to locate the platform or balcony

a substantial distance above the level of the sorting room floor, as illustrated.

At *a*, *b*, *c* and *d*, I have illustrated belt conveyors which serve to carry merchandise from balcony 11 to the sorting stations A. B. C and D, there being one of said conveyors assigned to deliver merchandise to each sorting station. The conveyors *a*, *b*, *c* and *d*, are preferably so disposed at the balcony 11 that employees receiving packages discharged by conveyors 10—10 may easily toss any package upon any proper one of the conveyors *a*, *b*, *c* and *d*. In the present showing, said conveyors are disposed in superposed relation.

Each sorting station comprises a set of bins with the aid of which, by one handling of each item, all items delivered to the station may be sorted with respect to a section of assembly receptacles in which said items are to be assembled into complete orders or consignments, and with respect to the time periods in which they are to be thus assembled. The sorting stations herein illustrated comprise four sections each, each section consisting of three superposed bins. Each station comprises a platform 12, a table or bench 13, and steps 14, which afford access to the platform. Chutes 15 receive merchandise from the conveyors *a*, *b*, *c* and *d*, and discharge same upon the tables or benches 13. Each vertical tier of the bins at each station constitutes a "bin section". These sections or tiers of bins are numbered 1, 2, 3 and 4, in Figure 1. The several bins of each section are readily accessible to the employee, or employees, located at the table 13. The bins preferably slope downwardly away from the table 13, the outer ends of the bins being readily accessible to the employees whose duty it is to take parcels out of the bins and to deliver said parcels to the assembly baskets presently to be described. With respect to the employees last mentioned, I will state that there is preferably one of said employees assigned to each bin section. Said last mentioned employees work out of the bins in accordance with a definite time schedule. Thus, we will say that each employee works out of the top bin of a certain section during the first twenty minutes of each hour that the method is in operation, that during the second twenty minutes such employee works out of the middle bin of the same section, and during the third twenty minutes such employee works out of the lower bin of that section. This plan is important because it makes it possible to make use of the hereinafter described assembly baskets once every twenty minutes.

Located adjacent to each sorting station are racks 16—16, which support a plurality of assembly baskets 17—17. These baskets bear individual numbers (not shown) which are visible to persons working between the bin sections and the racks 16—16. For every bin section in the system, there is a corresponding assembly basket section, which is in charge of the employee who works out of that particular bin section. Thus, the employee who works out of bin section 1 of station A is in charge of basket section A1. Employees working out of other sections of the same station, or of other stations, are in charge of similar basket sections. In every case, the basket sections are located adjacent to the bin sections from which said basket sections are to receive packages.

I now call attention to the tables 18 which are preferably arranged in rows alongside the assembly basket racks 16 on the sides thereof away from the sorting stations. These tables are provided for the use of packers who take complete orders or consignments from the assembly baskets, pack or wrap said orders or consignments, as may be required, and deliver the packages or boxes in which same are contained to conveyors 19—19, which, either directly or through the agency of auxiliary conveyors or chutes, deliver said packages or boxes to a shipping room (not shown).

Every order received by the mail order establishment is delivered to a scheduling department. The scheduling department transmits a suitable memorandum to each of the departments or stock rooms from which the several items of the order are to be secured, all memoranda pertaining to a certain order bearing certain similar markings or indicia which are utilized in the process of getting all of the items of the order assembled in the same basket, checked, and in the hands of the packers at a definite time, or rather at some time within a definite time period, say, for instance, within a time period of twenty minutes.

Let us refer to Figure 4, wherein I have illustrated one of the memoranda hereinbefore mentioned. At the top of this memorandum are a plurality of rectangles. In the first rectangle appears the letter "B", which indicates that the particular order under consideration is to reach the packers through sorting station B. In the second rectangle appears the numeral "4" which indicates that the several items of the order under consideration are to be assembled by the employee who works out of bin section 4 of station B. In the third rectangle appear the figures "10:20" which indicate that the assembling is to be accomplished in the twenty minute period immediately following 10:20 o'clock. These last mentioned indicia also indicate that the item bearing the memorandum is to be assigned to the middle bin of section 4 of station B, by the employee, or employees, in charge of station B. In the last rectangle appear the numer-

als 310, which indicate that for the purpose of assembly and checking the item bearing the memorandum is to be assigned to basket 310, being one of the baskets of assembly basket section B^4.

When a memorandum of the kind exemplified in Figure 4 is received in any stock room, the item of merchandise called for by such memorandum is taken out of stock, and placed in a carton, envelope or the like, to which the memorandum is attached. It is the duty of some employee in the stock room to see that the particular item under consideration reaches balcony 11 at any time within the hour immediately preceding the time noted in the third rectangle at the top of the memorandum. After arriving at the balcony, the item is picked up and delivered to the conveyor leading to the station noted in the first rectangle of the memorandum. In the case of an item bearing the particular memorandum shown in Figure 4, it would be delivered from the balcony to conveyor *b*, and be carried by such conveyor to sorting station B. An employee working at station B would, by a glance at the number in the second rectangle of the memorandum, determine that such item should be assigned to section 4, and by noting the last two numerals in the third rectangle would determine that the item belongs in the middle bin of section 4. Such employee would therefore place the item in the middle bin of bin section 4 of sorting station B. It will be understood, of course, that all items belonging to the same order will bear the same indicia, and will be handled in the manner described; hence, all items belonging in the same order with the particular item hereinbefore mentioned will reach the middle bin of bin section 4 of station B sometime within an hour preceding 10:20 o'clock.

At 10:20 o'clock the employee working out of bin section 4 of station B (being also the employee in charge of assembly basket section B^4) begins to take packages or items out of the middle bin of section 4, and to distribute them to the baskets designated by the numbers appearing in the last rectangles of the memoranda appearing upon such items. As a given basket number is assigned to but one order for every twenty minutes of working time, each basket, before the expiration of the twenty minute period, should receive all of the items pertaining to but one order. As soon as all of the items out of the middle bin of bin section 4 of station B have been distributed, the employee who has done the distributing proceeds to check the orders in the assembly baskets to see that all are complete. As each order is checked, the basket containing same is moved partially through the basket rack to indicate to the packers that the order is complete, and ready to be packed for delivery to the shipping room. The packers, of course, take each order as the same is checked, and prepare same for shipment, delivering the properly packed merchandise to the shipping room, through the agency of conveyors 19—19, or otherwise.

At 10:40 o'clock, the employee working out of bin section 4 of station B ceases to work out of the middle bin of such section and begins to work out of the bottom bin. At 11:00 o'clock such employee works out of the top bin and at 11:20 again works out of the middle bin.

For purposes of illustration, I have explained how my method contemplates handling the several items of an order, which is to be assembled and checked in basket 310 of assembly basket section B^4 sometime in the twenty-minute period following 10:20 o'clock. Hence, my explanation of the working of the method has been confined somewhat to station B and the basket section B^4. However, it will be understood that the duties of all employees in charge of sorting stations are identical, and that the duties of all employees in charge of assembly basket sections are identical.

Briefly stated, the items of merchandise handled in accordance with my method are delivered to a sorting station contiguous to the final assembly bins, and from which sorting station, such bins are immediately and directly accessible, and at which sorting station each item is, by a single operation by an employee there located, distributed on the basis of two classifications, the first classification having regard for the section containing the bin or basket wherein the said item is to go for the purpose of final assembly and checking, and the second classification having regard for the time when such assembly and checking is to be effected.

I appreciate that the apparatus employed in carrying my method into effect may be varied within wide limits, for instance, the sorting station instead of consisting of fixed bins might consist of movable baskets. Such a modified arrangement is illustrated in Figures 5 and 6. In these figures, reference numerals 20 indicates a framework which provides a plurality of platforms 21—21 and roller tracks 22—22, there being one roller track associated with each platform. The platforms may be arranged in four vertical tiers of three each. The platforms are adapted to support baskets 23—23. Each vertical tier of baskets may be regarded as constituting a sorting station section, and as serving a purpose corresponding to that of the fixed bin sections of the stations illustrated in Figures 1, 2 and 3. At the beginning of each predetermined time period, the baskets out of which the employees in charge of the assembly basket sections are to work during that period are pushed off of their

respective supporting platforms and are permitted to roll down tracks 22 to positions where they are accessible to the employees in charge of the assembly basket sections. If any basket becomes full before the beginning of the period in which items are to be taken out of that basket, it is simply pushed off of its supporting platform onto the roller track associated with that platform, and is replaced by an empty basket which in turn is moved onto the roller track when filled, or at the commencement of the time period during which the items contained in the basket are to be distributed to the assembly baskets.

The assembly baskets 17—17 of Figures 1 to 3 and the racks whereon said assembly baskets are mounted, may, of course, be replaced by fixed or movable bins of any suitable type.

Having thus described my improved method, what I claim as new and desire to secure by Letters Patent of the United States is:

1. The herein described method which consists in distributing the several items of a multiplicity of orders to a plurality of sorting stations and, at the sorting stations, by one handling of each item, sorting said items into major groups, each of which is located adjacent to a section of assembly receptacles assigned to said major group, and simultaneously, by the one handling before mentioned, sorting the various items of each major group into minor groups which are to be transferred to the assembly receptacles during different periods of time, and successively sorting the minor groups of each major group into separate orders by transferring the several items of each minor group into the assembly receptacles, the items of different orders being placed in different assembly receptacles.

2. The herein described method which consists in distributing the several items of a multiplicity of orders to a plurality of sorting stations and, at the sorting stations by once handling each item, sorting said items into a plurality of groups each including a plurality of sub-groups of items which are to be assembled into complete orders during a certain predetermined time interval.

3. The herein described method which consists in distributing the several items of a multiplicity of orders to a plurality of sorting stations and, at each sorting station, sorting said items into a plurality of groups, each of which includes a plurality of sub-groups consisting of items constituting a plurality of orders, and subsequently sorting the items of the several sub-groups into complete orders during successive periods of time.

4. The herein described method which consists in distributing the several items of a multiplicity of orders to a plurality of sorting stations, and, at the sorting stations, by once handling each item, sorting said items into a plurality of groups each including a plurality of sub-groups of items which are to be assembled into complete orders during one of a number of successive and equal periods of time.

5. The herein described method which consists in distributing the several items of a multiplicity of orders to a plurality of sorting stations and then, at each sorting station, by once handling each item, sorting the items in accordance with a fixed classification and a changing classification, the fixed classification being into groups which are sub-divided in accordance with the changing classification, the changing classification being in accordance with the time intervals in which the various items of the orders are to be assembled for packing.

6. The herein described method of handling a multiplicity of items constituting a plurality of orders which consists, by once handling each item, of sorting said items into a plurality of groups each including a plurality of sub-groups of items constituting orders which are to be assembled within one of a plurality of successive and equal intervals of time.

7. The herein described method which consists in delivering a plurality of items of merchandise to a sorting station which is contiguous to each of a plurality of sections of final assembly baskets which are immediately and directly accessible from said sorting station, and, by a single operation by an individual located at the sorting station, distributing each item on the basis of two classifications, the first classification having regard to the section containing the basket wherein the said item is to go for the purpose of final assembly and checking, and the second classification having regard for the time when such assembly and checking is to be effected.

8. The herein described method which consists in delivering items of merchandise to a sorting station contiguous to final assembly receptacles, and from which sorting station such final assembly receptacles are directly accessible, and sorting each item, at the sorting station, by a single operation of an individual located at the sorting station, first, with respect to a section of final assembly receptacles containing the receptacle wherein said item is to go for the purpose of assembly and checking, and, second, with respect to the time when such assembly and checking is to be effected.

9. The herein described method which consists in distributing the several items of a multiplicity of orders to a plurality of sorting stations, each of which is located contiguous to a plurality of sections of final as-

sembly receptacles which are assigned to such station, and, at the sorting stations, by a single operation with respect to each item, sorting each item, first, with regard to the section of final assembly receptacles containing the receptacle wherein said item is to go for the purpose of assembly and checking, and, second, with regard to the time when such assembly and checking is to be effected.

In witness whereof, I hereunto subscribe my name this 29th day of September, 1921.

ALFRED S. ALSCHULER.

Witnesses:

EMILE J. BOURGEOIS,

ALBIN C. OHLBERG.