To all whom it may concern:

Be it known that I, Charles W. Shartle, a citizen of the United States, residing at Middletown, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Processes for Producing Paper Pulp from Raw Stock, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a new and improved process for producing paper pulp from raw stock, such as rags, as by guished from a heterogeneous stock in which many different kinds of materials, such as rags, paper, string, rope, metal, glass, etc., are found.

This process comprises a series of steps or operations, by which the raw stock is ultimately reduced to finished pulp for making paper, as hereinafter stated.

I have selected one form of apparatus which may be employed in practicing this process.

In the accompanying drawings I have illustrated this apparatus in what may be termed diagrammatic form, which I will describe after I have set forth my process.

In these drawings:

Fig. 1 is a diagrammatic view in plan of a simplified apparatus in which the steps of the process may be practiced; and Fig. 2 is an elevation of this apparatus.

As stated, my chief object is to so treat a stock made up of rags or scraps of cloth or goods in the broadest sense, as to convert them into a fine and complete paper pulp, this product being produced by the process in a succession of separate quantities, and all of the quantities being produced simultaneously, the effect of which is to hasten and cheapen the cost of production.

The process comprises an initial breaking or reducing of the rags, while immersed in water, to a coarse, though substantially uniform state; in conveying this reduced stock, accompanied by water, and dividing it into a succession of separate quantities; in subjecting each quantity to a beating operation in water to effect the final reduction to convert the stock into pulp, and in drawing off such completed product.

It will be seen that by this process the raw stock of rags is rapidly converted into finished pulp, the pulp being gleaned in finished condition in a number of batches, all produced at the same time. The process is, therefore, not only efficient, but very rapid and correspondingly economical in producing the product sought.

Turning now to the apparatus by which my process may be practiced, a breaker A of any well known type is succeeded by a series of beaters B also of acceptable known types. The breaker comprises a vessel in which is rotatably mounted a breaker proper C having coarse knives or blades driven by a belt pulley D. Water and the broken stock flows over a weir E into a box F from which it is pumped by a stuff pump G into a distributing pipe H having cut-offs or valves I by which to control the discharge of the broken stock and water into the respective beaters L. This pipe H discharges into a stock chest J for the delivery thereto of the surplus material and water which are returned to the breaker A by an overflow pipe K. Each beater comprises a tub with a rotatable beater proper L having finer knives or blades than those used in the breaker proper C. A belt pulley M for each beater proper L serves to rotate the same. A dump valve N is provided for each beater by which the beaten product, which is reduced to a finished state, can be drawn off. The breaker also has a discharge valve O for convenience in drawing off any residuum stock.

From this outline it will be seen that the steps of my process may be readily practiced by the apparatus illustrated in the drawings. The raw material is subjected to a breaking operation in the breaker A and with more or less water is fed in a broken state over the weir into the box and thence by the pump is forced through the delivery pipe H and discharged in quantities through the valves I into the respective beaters. Here each batch is subjected to the step of beating and reduced rapidly and continuously until it reaches a finished stage to constitute pulp, when it is discharged by opening the valve N.

By way of cross reference to my companion application filed July 12, 1920, Ser. No. 395,527, I would state that there is some similarity in the two processes. This similarity resides in the matter of the separate treatment or beating of separate quantities of stock to produce separate completed batches. But in my present process, besides these features of similarity, the process is a more extended and amplified one as
regards a double breaking operation, a settling operation, a screening operation and a thickening operation.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The herein described process of making paper pulp consisting in reducing raw stock to a partial state of reduction, in conveying the stock so reduced through a course having a return of excess stock to the source of first reduction, in withdrawing portions of the stock so conveyed into a series of quantities, and in reducing said quantities of pulp to finished state by further processes of reduction.

2. The herein described process of making paper pulp consisting in reducing raw stock to a partial state of reduction, in conveying the stock so reduced through a course having a return of excess stock to the source of first reduction, in withdrawing portions of the stock so conveyed into a series of quantities, and in reducing said quantities of pulp to finished state by separate simultaneous processes of reduction.

In testimony whereof, I affix my signature.

CHARLES W. SHARTLE.