

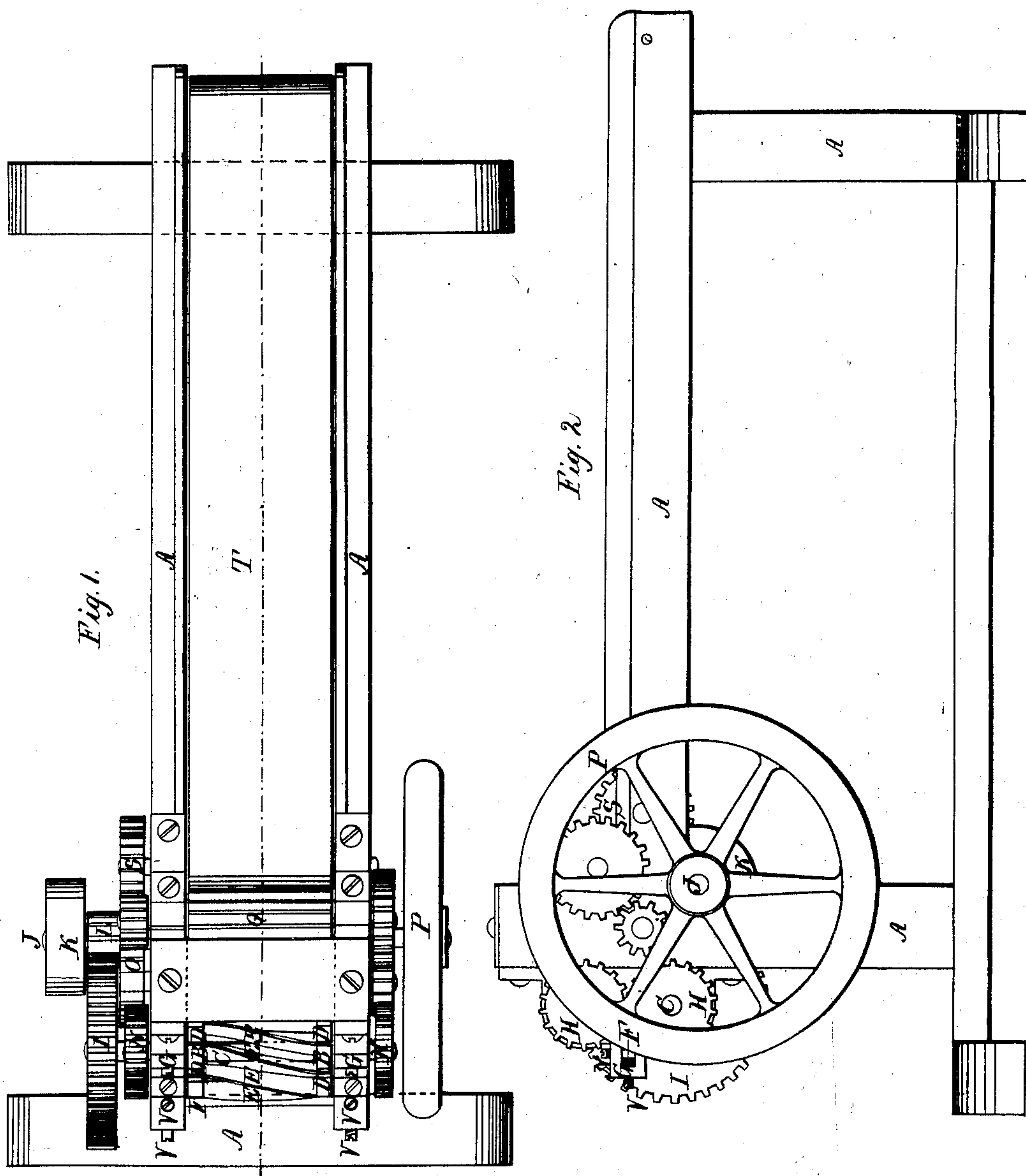
Sheet 1-2 Sheets.

Woodward & Bartlett.

Rag and Paper Cutting Mach.

N^o 11,882.

Patented Oct. 31, 1854.

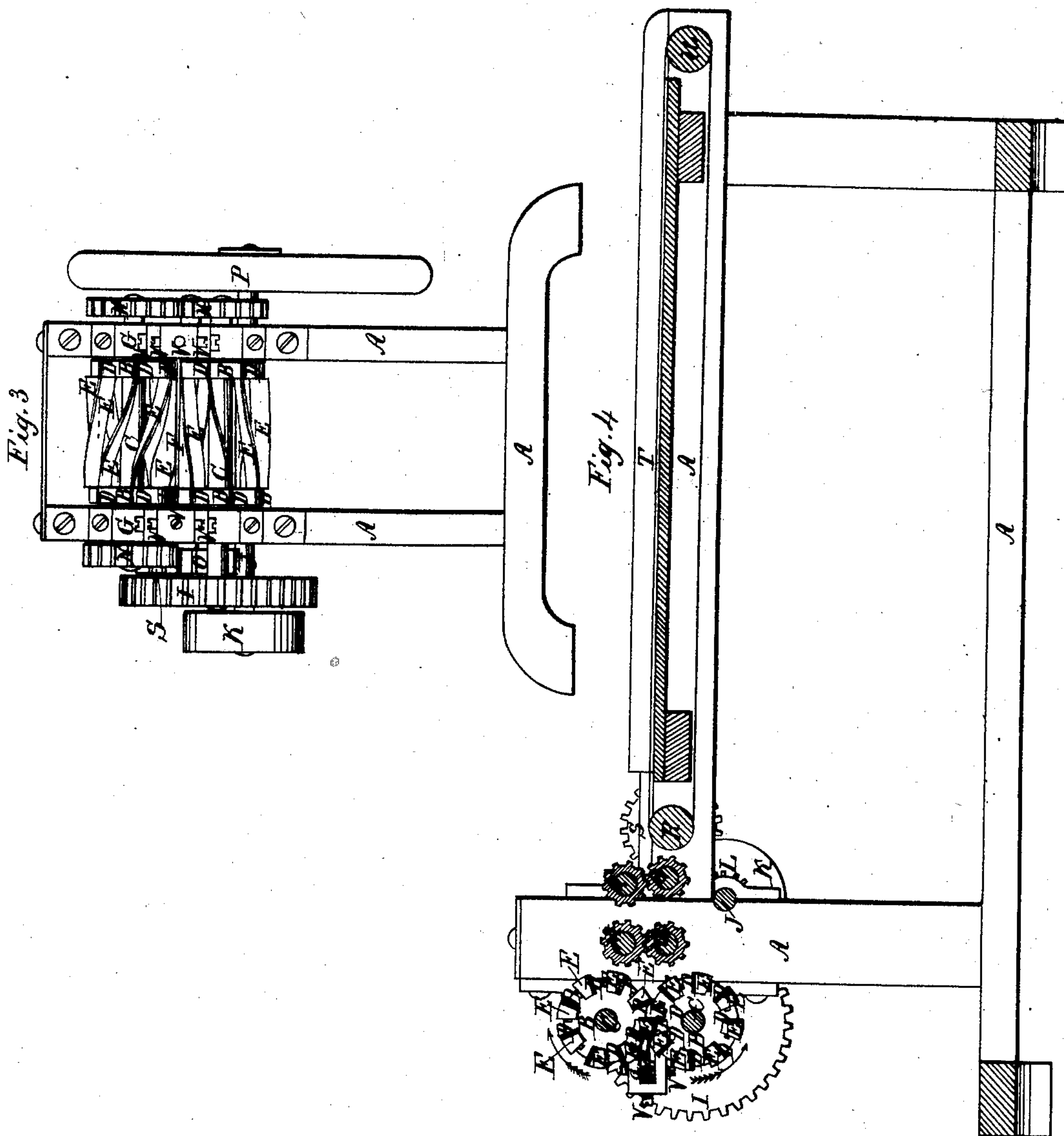


Woodward & Bartlett.
Rag and Paper Cutting Mach.

Sheet 2-2 Sheets.

N^o 11,882.

Patented Oct. 31, 1854.



UNITED STATES PATENT OFFICE.

ALONZO S. WOODWARD, OF LOWELL, AND BENJ. F. BARTLETT, OF PEPPERELL,
MASSACHUSETTS.

MACHINERY FOR CUTTING RAGS FOR MAKING PAPER.

Specification of Letters Patent No. 11,882, dated October 31, 1854.

To all whom it may concern:

Be it known that we, ALONZO S. WOODWARD, of Lowell, in the county of Middlesex and State of Massachusetts, and BENJAMIN F. BARTLETT, of Pepperell, in the county of Middlesex and State of Massachusetts, have invented a new and useful Machine for Cutting Rags and other Stock of which Paper is Composed; and we hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which—

Figure 1 is a plan. Fig. 2, a side elevation. Fig. 3, an end elevation. Fig. 4, a longitudinal and vertical section.

The nature of our invention consists of a machine embodying the principles hereafter detailed, in which rags and other paper stock are cut, by the knife, and the revolving of two or more cylindrics, with their central parts hollow they having spiral wings in their peripheries, and reaching from end to end, and before which is placed a stationary knife across the edge of which the rags are cut by the revolving of the cylindrics.

To enable persons skilled in the art of making paper machinery to carry out our invention, we will describe the same as follows:

We construct a frame of wood as seen at A, Figs. 1, 2, 3, and 4 of the drawings. We then construct two cylindrics, by placing two cast iron heads B firmly upon each of the two wrought iron shafts as seen at C Figs. 1, 3 and 4, and these shafts C revolve in substantial stands as seen at G Figs. 1, 2, 3 and 4, and to these same stands, the knife F is held by the set screws as seen at V, Figs. 1, 2, 3 and 4. And in the periphery of each of these heads B, is cut a number of slots as seen at D Figs. 1, 3 and 4, and into these slots we fit and key firmly each of the ends of the winding wings, made of steel as seen at E Figs. 1, 3 and 4. Each of these winding wings are twisted one eighth of the circumference of the cylindric in the distance between the heads B, the wings in one cylindric being twisted one way, and the wings in the opposite cylindric are twisted in an opposite direction so as to allow them to turn together as seen at Figs. 3 and 4, or something like the teeth of spiral gears. The

said wings play or run together as seen at Figs. 3 and 4, for the effectual forcing and cutting the rags across the edge of the knife. The inside edge of each of the wings reaches part way from the periphery of the head pieces B to the outside of the shaft C thus leaving the central part of the cylindrics entirely open except the position occupied by the said shaft C.

By the cylindrics being constructed open as above described, the rags or other stock or substance to be cut will not, nor cannot clog and stop them, as is ascertained by actual experiment. It is also known by actual experiment that rags will clog and stop the spiral winged cylinders with the central parts of them solid. Thus it will be seen that the cylindrics and knife as invented and made by us, will cut rags and all other stock used in making paper, such as old bags, ropes, cotton waste, &c., equally well whether it is wet or dry, thus saving the trouble of drying the stock to be cut, which has to be done for other rag cutting machines. The stock has to be immediately wet after being cut, to be worked into paper. And the cylinders with spiral wings and solid central parts cannot be made to cut wet or dry paper stock with any success as has been by us and others, tested to our satisfaction.

It will be understood that the cylindrics as they revolve, take the stock from the apron or feed rolls and press it across the edge of the knife, by which operation it is cut in the most perfect manner. Still it is impossible to clog this machine, no matter how fast the rags or other stock or substance is fed into it.

Immediately back and between the out edges of the spiral wings E, we place an adjustable steel knife as seen at F Figs. 1, 2, 3 and 4, the line of the edge of which forms a tangent to the circle described by the revolving of the said cylindrics, and the edge of the knife approaching as near as possible to the out edge of the wings E of both cylindrics. On one end of the shafts C we firmly secure gears which gear into each other as seen at H Figs. 1, 2 and 3, for the purpose of conveying power from the lower to the upper cylindric.

At the end of the lower shaft C we place and fasten a gear, seen at I Figs. 1, 2, 3 and 4, forward of this gear we properly

fit, a wrought iron shaft, in substantial bearings as seen at J Figs. 1, 2, 3 and 4, on one end of which is fastened the driving pulley K Figs. 1, 2, 3 and 4 and pinion L Figs. 1 and 4, which connects with the gear I, and on the opposite end of this shaft J we attach a balance wheel P Figs. 1, 2 and 3, for evening the motion of the machine.

At M Fig. 4 is seen a set of feed rolls which are driven by the gear N, Figs. 1, and 3, gearing into the gear O Figs. 1, and 3, and in front of them we place another set as seen at Q, Figs. 1 and 4, and are driven from the first set of feed rolls. The feed rolls M run about one third faster than the rolls Q for the purpose of evening the stock as it passes through to be cut. In front of these feed rolls we place an apron T as seen at Figs. 1 and 3, which is driven by the roll R Fig. 4 and gear S Figs. 1, and 4, and passes around the friction roll U at the front end of the machine. The cylinders should run about one hundred revolutions per minute as the arrows point. The first set or set of feed rolls nearest them should run about the same speed, and the front set of feed rolls should run about 70 turns per minute.

To operate our machine it is only necessary to apply the power, and place the rags upon the apron T, thus rendering further description on this point unnecessary.

Having thus described our invention, we hereby state that we do not claim a spiral cutting cylinder with the central part of it

solid as in the patent granted (for cutting straw,) to A. S. Macomber in 1850, as such will not work successfully to cut paper rags and other paper stock. Neither do we claim a combination of the said spiral cutting cylinder with the stationary cutting knife as in the said "Macombers Patent." Nor do we wish to claim any other thing, device, or part, as claimed or covered by grant of Letters-Patent to the said Macomber.

What we claim as our invention and desire to have secured to us by grant of Letters-Patent is,

1. The cylinders made, and constructed, and used, (as described in this specification and the drawings which form part of it) for the purposes of cutting paper rags, and other paper stock substantially as set forth.

2. We claim our before described cylinders in combination with the cutting knife F, when arranged and operated essentially and for the purposes as set forth.

3. We claim the combination of the two sets of feed rolls, with the cylinders and knife, one set of them the feed rolls, running at a greater speed than the other set, for the purpose of evening the stock before it reaches the cylinders and cutting knife F, as set forth.

ALONZO S. WOODWARD.

BENJAMIN F. BARTLETT.

Witnesses:

J. HAGGERTY,

H. S. BLAISDEN.