No. 690,505. Patented Jan. 7, 1902.

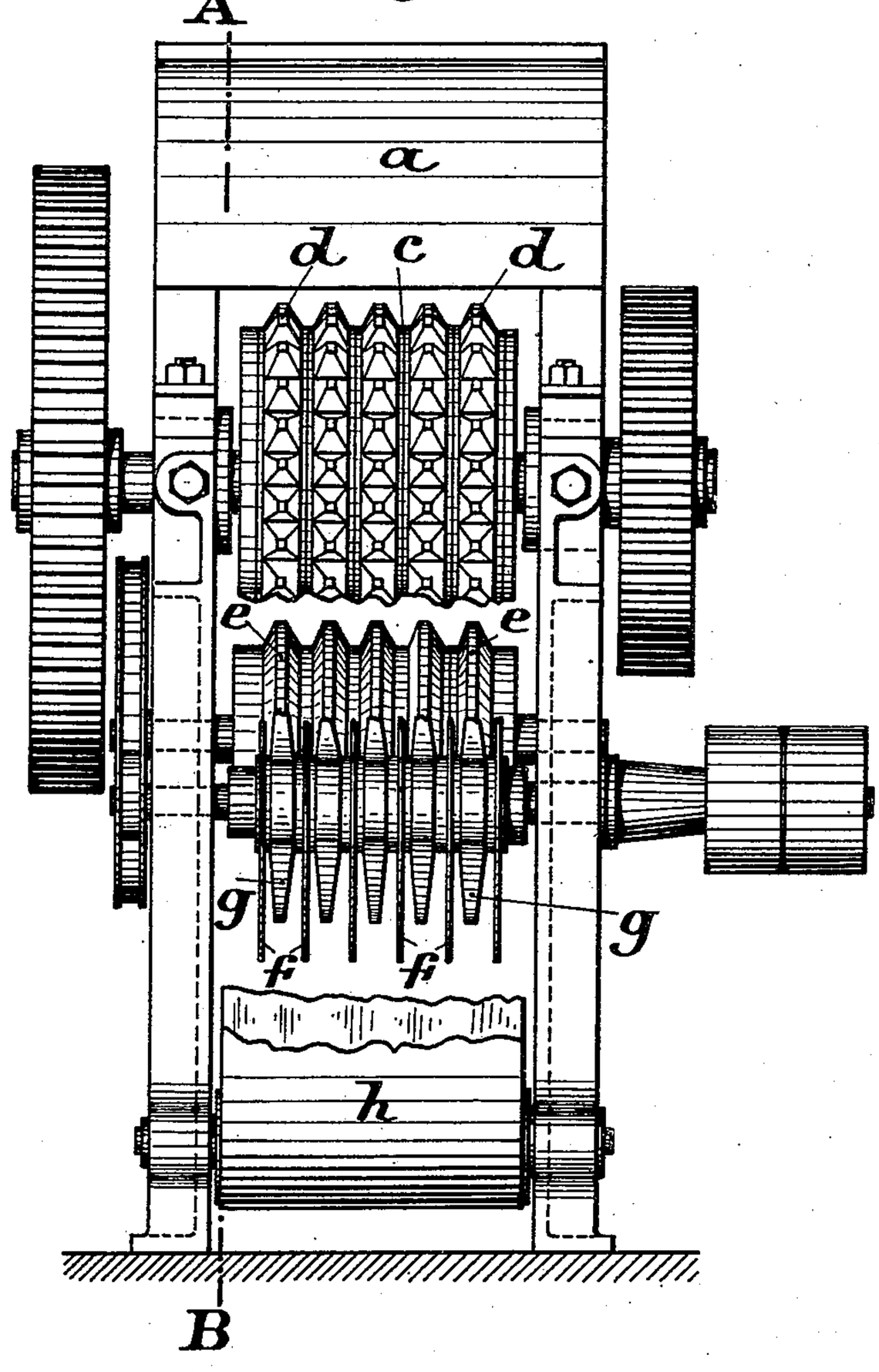
C. WURSTER.

MACHINE FOR TEARING UP PAPER, PAPER PULP, AND PAPER STOCK.

(Application filed May 25, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



WITNESSES

W. A. Alexander

J. R. Watkins.

ATTORNEYS

INVENTOR

Casimir Wurster

By

Fowler & Bryson.

No. 690,505. Patented Jan. 7, 1902.

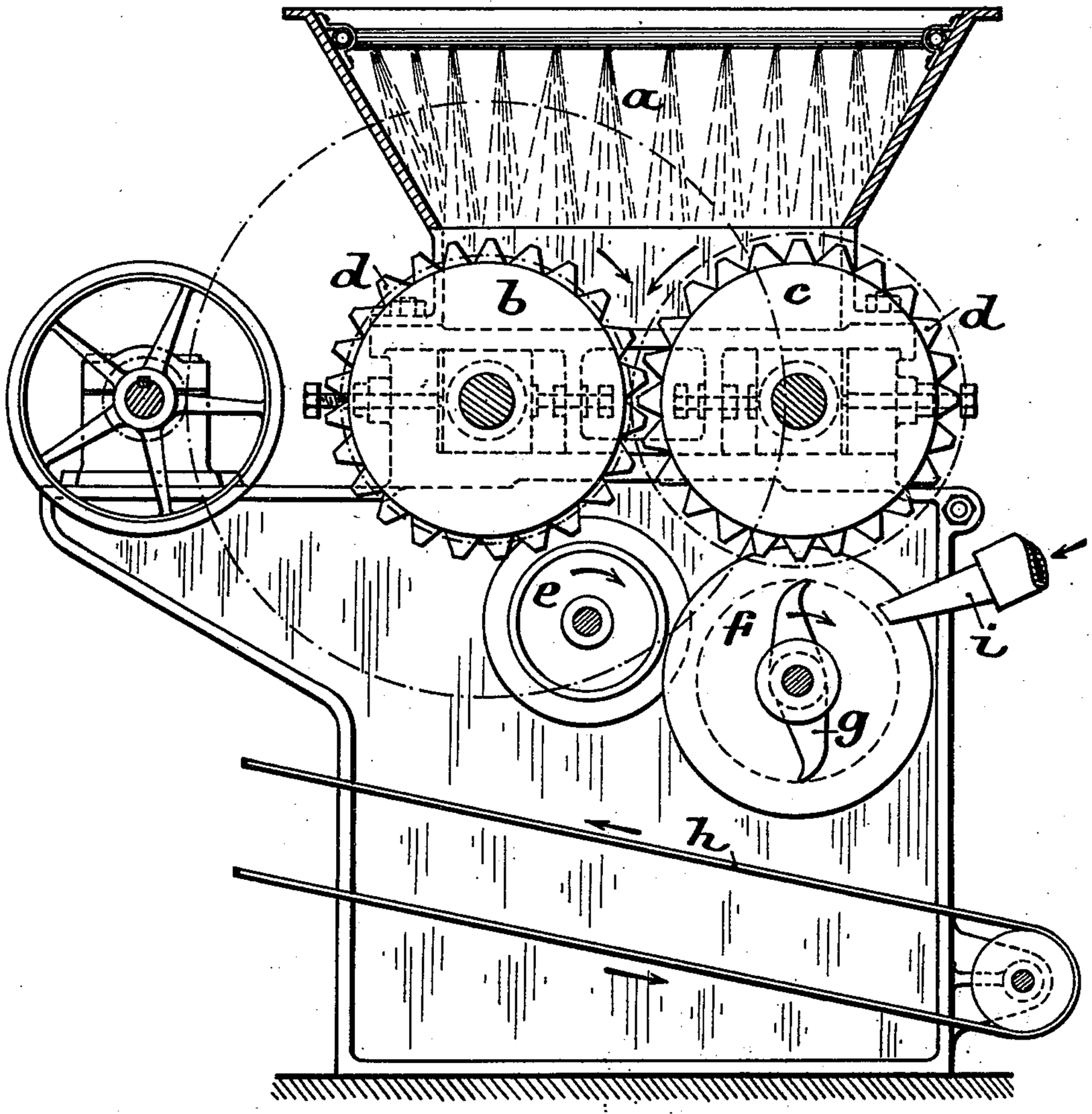
C. WURSTER.

MACHINE FOR TEARING UP PAPER, PAPER PULP, AND PAPER STOCK.

(Application filed May 25, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2.



WITNESSES

W. A. Alexander

J. R. Watkins.

INVENTOR

Casimir Wurster

By

ATTORNEYS Fowler & Bryson.

UNITED STATES PATENT OFFICE.

CASIMIR WURSTER, OF LONDON, ENGLAND.

MACHINE FOR TEARING UP PAPER, PAPER-PULP, AND PAPER-STOCK.

SPECIFICATION forming part of Letters Patent No. 690,505, dated January 7, 1902.

Application filed May 25, 1901. Serial No. 61,847. (No model.)

To all whom it may concern:

Be it known that I, CASIMIR WURSTER, a subject of the Emperor of Germany, residing at Dudley Mansion, 29 Abbey road, St. John's Wood, London, England, have invented certain new and useful Improvements in Machines for Tearing up Paper, Paper-Pulp, and Paper-Stock; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In using the new pulping-machines or the old stones for pulping up dry paper a great inconvenience is felt by the large size of the sheets of paper in feeding these pulping-machines. This is especially the case with the machine broken and the salle broken. These large and heavy layers of sheets of paper are only moistened with great difficulty or with a great amount of manual labor. It is therefore desirable to tear up the continuous paper or the large sheets into smaller pieces about the size of the hand. If these pulping-machines are fed with pieces of paper cut down to hand-size, all these pulping-machines will turn out much more work. In a few mills the rag-cutters are used for this purpose, and even the old cotton or wool opener or the wolf has been called into requisition. These machines produce any amount of paper-dust and use up much power, the rag-cutter also shortening and destroying many fibers.

This new machine has been built with the object of tearing up the paper instead of cutting the same. This is done by means of a series of rotary saws, which tear the paper first into strips, which strips are also torn into pieces at the same time.

Another object is to enable the paper to be fed not only in separate sheets, but also in whole bundles or broken as they come from the machine-room or the salle.

To attain these objects, the paper is first fed into a hopper, where two rotary feeding revolving fluted rollers or rollers with very heavy teeth compress the loose paper-stock. At the same time the thick layers of paper as they come from the salle are being disarranged by the teeth of the rollers and opened up, so that only one or a few sheets at the time present their sides to the saws to be torn into strips and bands. Another fluted roller placed below forces the paper onto the teeth of the saw, where the compressed stock or the opened-up layers of salle-paper are sawed or torn into bands. At the same time iron fingers, in the form of hooks fixed between the blades of the saw, tear the strips of paper into smaller pieces.

The drawings show the back view of the paper-tearing machine in Figure 1. Fig. 2 is a transversal section through the line A B of Fig. 1.

The paper is put into the hopper *a*, where it is seized by the teeth *d* of the rollers *b* and *c* and is not only compressed, but also opened up. This thick band of paper is now forced by the fluted guide-roller *e* toward the rollers *b* and *c*. This roller is placed in such a position to the feeding-roller that the guiding-roller leaves only a small space between itself and the feeding-roller, Fig. 2. The guide-roller moves in the direction of the arrow *t*, Fig. 2, and presses the paper against the lower part of the feed-roller *c*, where the paper band is now torn up into strips by the circular saws *f*, and at the same time torn into small pieces by the hooks *g*, disposed between the blades of the saws. The cut paper falls onto an endless belt *h* to be conveyed straight into the pulping-machine. These rotary saws practically form no dust, as the pieces of paper torn out are of the size of peas or lentils and are heavy enough to settle down on the traveling band and not to contaminate the air as dust. If the strips of paper show the tendency to roll around the shaft of the saws even at the highest speed and the centrifugal force is not able to throw them off, a nozzle *i*, ejecting compressed air or steam, is directed between each interwall between the saw-blades to blow off the cut paper. These nozzles ejecting compressed air or even steam can also be utilized to transport the torn paper through a canal or some piping straight into the pulping-machines without the use of a traveling band. These same nozzles or a propeller acting like the nozzles may also be used to blow water and moistened air onto the paper before the saws touch the same. Wetting down the paper in the hopper with water, steam,

and compressed air and water may also be resorted to already in the hopper.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with a pair of toothed feeding and compressing rollers, of a circumferentially-fluted roller, and a set of saws cooperating with said circumferentially-fluted roller.

2. The combination with a circumferentially-fluted roller, of a set of saws coöperating with said roller, and a set of rotating hooks arranged between said saws and mounted on the same shaft therewith.

3. The combination with a pair of feeding and compressing rollers, of a circumferentially-fluted roller, a set of saws coöperating with said circumferentially-fluted roller, and a set of revolving hooks arranged between said saws and mounted on the same shaft therewith.

4. The combination with a pair of toothed feeding and compressing rollers, of a circumferentially-fluted roller, a set of saws coöperating with said circumferentially-fluted roller, and a set of revolving hooks arranged between said saws.

5. The combination with a circumferentially-fluted roller, of a set of saws coöperating therewith, a set of revolving hooks arranged between said saws, and means for forcing a fluid under pressure between said saws.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CASIMIR WURSTER.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT.