

(No Model.)

A. J. TUCKER.
DANDY ROLL FOR PAPER MACHINES.

No. 464,467.

Patented Dec. 1, 1891.

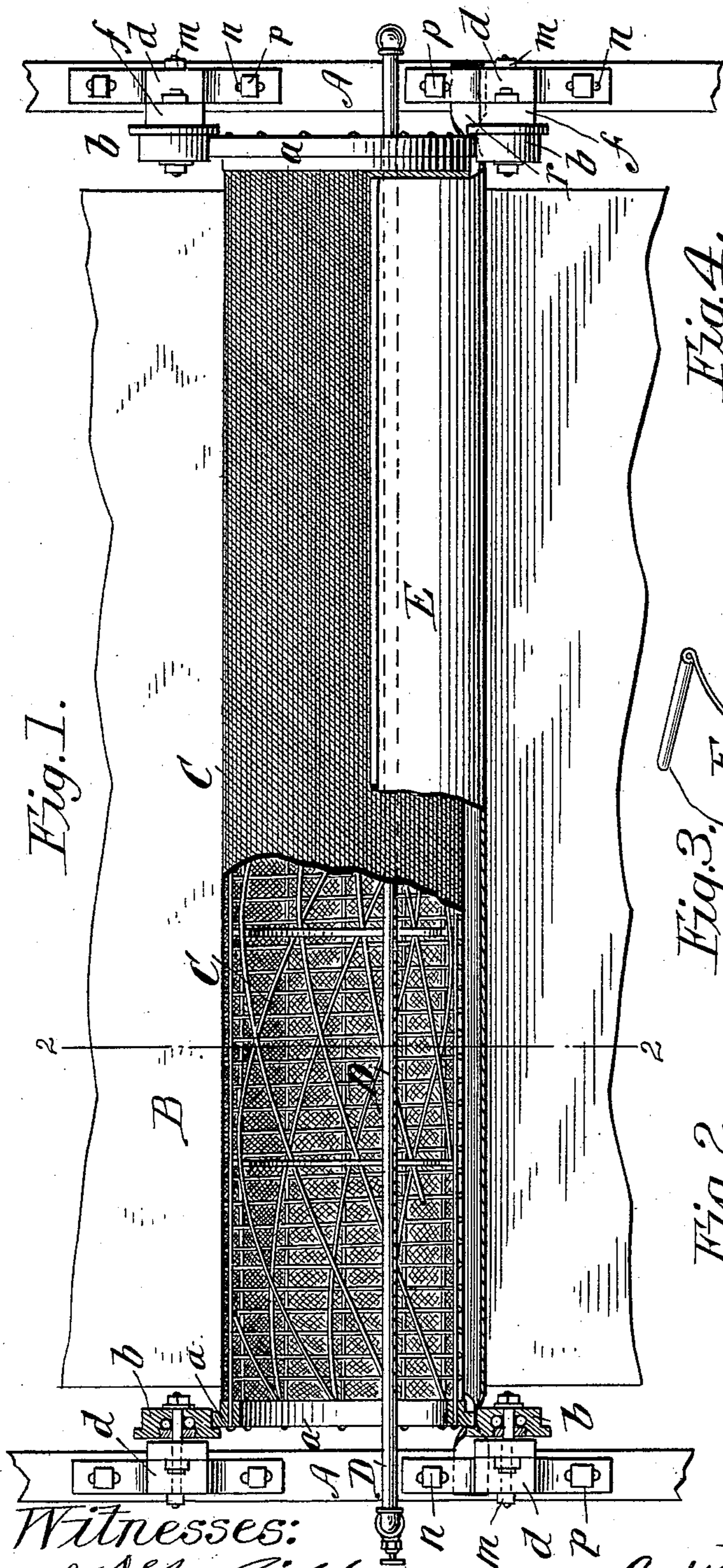


Fig. 1.

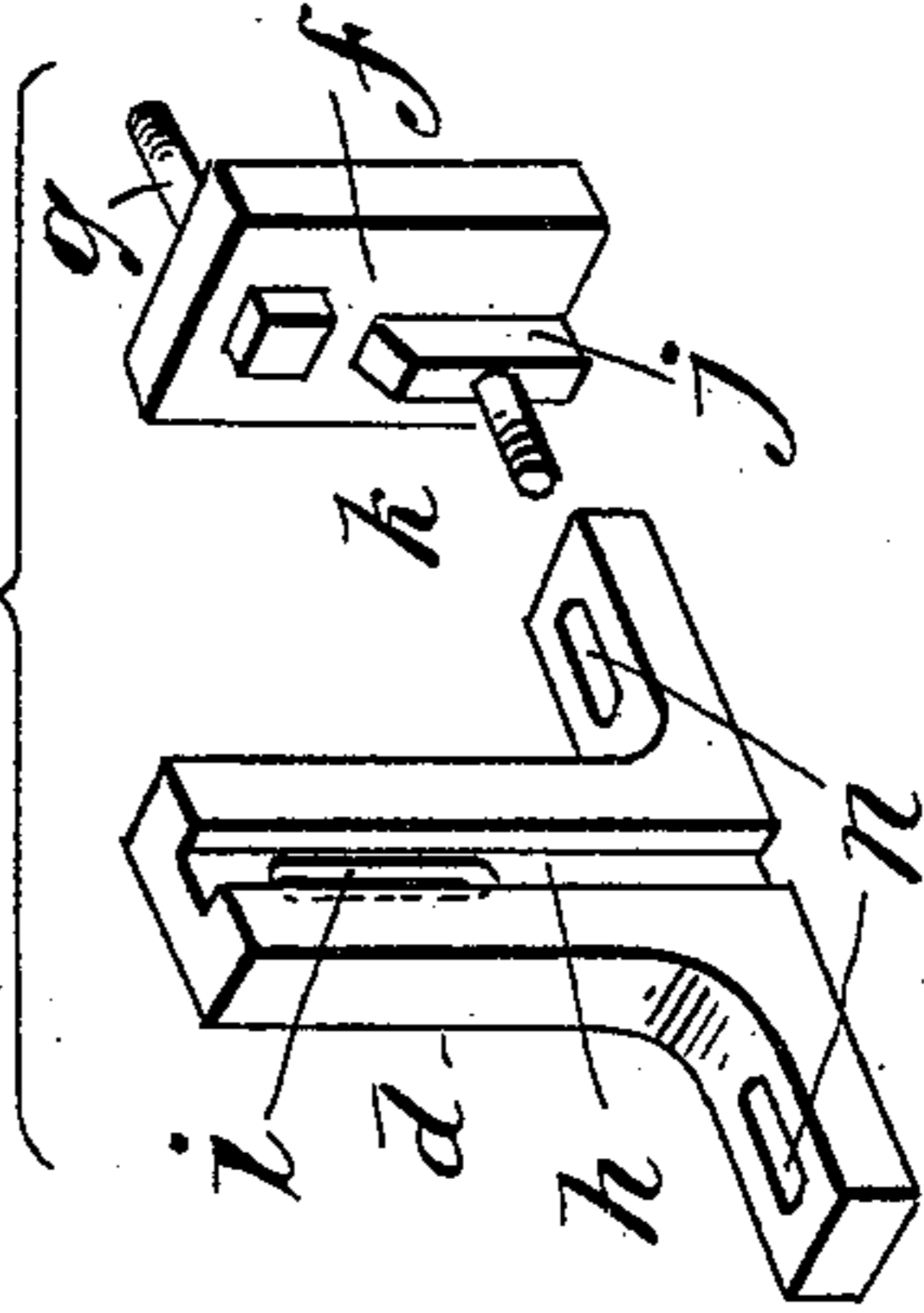


Fig. 4.

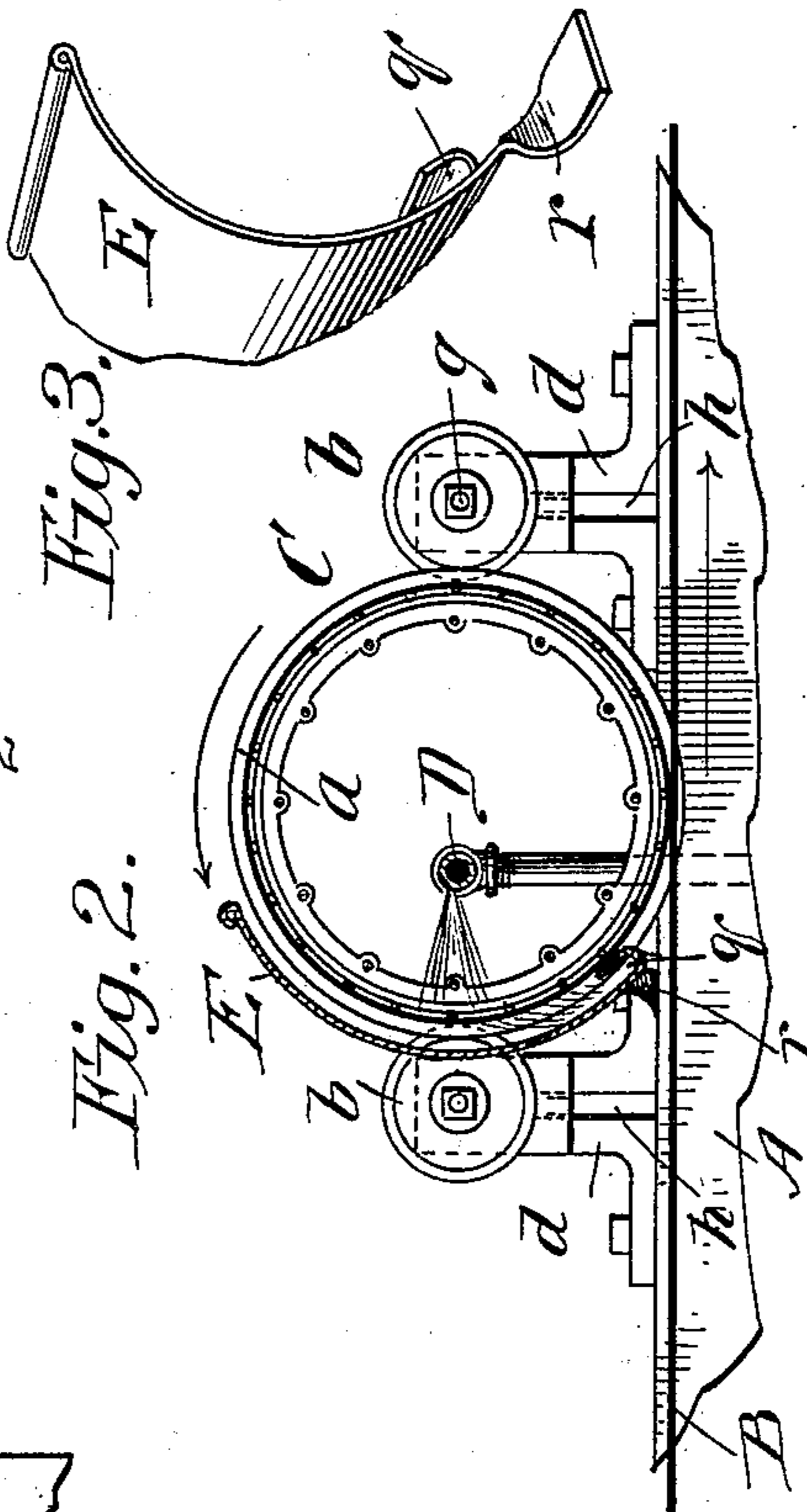


Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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DANDY-ROLL FOR PAPER-MACHINES.

SPECIFICATION forming part of Letters Patent No. 464,467, dated December 1, 1891.

Application filed November 22, 1890. Serial No. 372,329. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. TUCKER, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Dandy-Rolls for Paper-Machines, of which the following is a specification.

This invention relates to dandy-rolls for paper-machines and to other parts intimately related to such rolls, the object being to so mount the roll for its usual action with relation to the web that the axial shaft heretofore found in dandy-rolls may be omitted, so that a jet-pipe may be introduced within and along the roll without interference with the rotation of same for insuring the discharge of water against the side of the roll for freeing the latter of any fiber or pulp which may be taken up from the web.

The invention has for its object, also, other improvements in the dandy-roll appliances.

The invention consists in the construction and combination of parts, all substantially as will hereinafter more fully appear, and be set forth in the claims.

In the drawings, Figure 1 is a plan view of the dandy-roll and of the devices for supporting and constraining same for its proper movements, parts, however, being broken away and shown in horizontal section. Fig. 2 is a vertical cross-section on line 2 2, Fig. 1. Fig. 3 is a perspective view of an end portion of the apron and trough to be hereinafter more particularly referred to, and Fig. 4 is a perspective representation of the adjustable supports for the guide-rollers which are combined with the dandy-roll.

In the drawings, A A represent the side standards of a paper-making machine or a portion thereof, and B represents a horizontal layer of felt, as usual, above which the dandy-roll C is mounted for rotation. The dandy-roll C is of any usual construction, so far as the cylindrical shell or annulus for rolling on the web is concerned; but it will be seen that the heads *a* of the roll are formed by rings, which are entirely open and free as to their central portion, there being no axial shaft or axial bearings for the roll. The roll rests upon

the said layer B, or in the running of the machine upon the web of paper upon said layer, and is confined against any movement across its axis or in the direction of the travel of the web by the rollers *b b b b*, which are mounted on the uprights *d*, the axes of said rollers being about in the same horizontal plane as the axis of the dandy-roll, so that there is a space between the periphery of front and rear pairs of said rollers equal to the diameter of the end rings or flanges *a* of the dandy-roll, which rings form a continuous and even circular bearing for the dandy-roll; and, of course, owing to such relation of the rollers *b b* with the flange-rings *a* no impediment is constituted to the rising and falling of the dandy-roll, which rising and falling movements in practice are within very slight and almost imperceptible limits. The rolls *b b* are vertically adjustable on their supports of the machine-frame, so as to accommodate themselves as to their height and degree of separation to the different sizes of dandy-rolls or to the different sizes of the bearing-rings on the extremities thereof, and a practical means for constituting such adjustable support consists in the block *f*, on which the pintle *g* for a roller *b* is provided, which is vertically adjustable on the uprights *d d*, which uprights in turn are adjustable horizontally toward and from each other on the machine-frame and transversely of the axis of the dandy-roll. As particularly shown, the uprights *d* have vertical ways *h* therein, within which the tongues *j* of the blocks *f* fit, and the said uprights are vertically slotted, as at *i*, through which slots the studs *k* of said blocks pass, the said studs receiving on their extremities, which are screw-threaded, confining-bolts *m*. The feet or bases of the uprights *d* are slotted, as at *n*, whereby said uprights are capable of the transverse movement above mentioned about the bolts *p* when the nuts thereon are suitably loosened.

The jet-pipe D, which is horizontally and longitudinally extended through the dandy-roll, substantially as shown, is coupled by its ends to suitable pipes, one of which constitutes the water-supply pipe for said jet-pipe D, whereby water under suitable pressure may be supplied to the jet-pipe, the pipe coupled at

the other end serving, if desired, to carry off any surplus water, or water may be introduced under pressure to the jet-pipe at either end thereof. The jet-openings of the pipe D are
 5 opposite and directed toward one side of the dandy-roll—say, perhaps, at about a line horizontally opposite the axis of the roll, outside of which latter is the apron or shield E, which is suitably upwardly extended and is also
 10 downwardly extended from the line opposite the jet-openings of the pipe D, conforming more or less closely to the curve of the roll, the bottom of the apron having a turned-up portion at its lower extremity to form a trough,
 15 which is ranged in a line inside of and under a line on the dandy-roll at which the water-jet from the pipe D impinges. The greater proportion of the water projected against the side of the dandy-roll passes outwardly
 20 through the mesh thereof, carrying therewith pulp or fiber which may be lodged on the outer wire-cloth; but substantially all of the residue of the water which may not be forced horizontally through the interstices of the
 25 dandy-roll will drip through the mesh and be received by the apron-trough almost directly after being thrown against the inner side of the roll.

The trough-provided apron is supported on
 30 the standards A of the machine through means of the feet *r*, it being practicable to form the apron and trough and said supporting-feet integrally of sheet metal or other suitable material.

35 By the employment of dandy-rolls and constraining devices therefor substantially as described there is consequently a considerable economy, for the dandy-roll, having its ends formed by the open flange-rings and without
 40 any shaft or axial bearing, may be produced at less expense than would be the case were such shaft or axial bearings comprised therein; and having provided one set of the bearing and constraining rollers and the adjust-
 45 able sets therefor on the paper-machine such set of devices suffices for an indefinite time, and dandy-rolls may be replaced time and time again, as may be necessary, and without the expense of also providing new bearing
 50 portions or devices therefor other than the flanges or rings *a a*, having even and continuous peripheries, and which rings necessarily form a part of the dandy-roll structure.

It is a well-known fact that dandy-rolls
 55 vary greatly in diameter, there being hardly any two of exactly the same size, and the means set forth for accommodating varying-sized rolls and so mounting them that they may have slight rising and falling move-
 60 ments instead of being rigidly confined and so that without complicated or expensive contrivances the longitudinally-running jet-pipe may have its arrangement within the roll and yet not constitute any impediment to the
 65 movement or motion of the dandy-roll are most simple, practical, and convenient.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a dandy-roll and
 70 a support therefor at the under portion thereof, which support extends substantially the entire length of the dandy-roll, of rollers which bear peripherally on the portions of the roll next to its ends at the front and rear
 75 thereof, substantially as and for the purpose described.

2. The combination, with a dandy-roll and a support therefor at the under side thereof, which support extends substantially the en-
 80 tire length of the dandy-roll, of rollers which bear peripherally on the portions of the dandy-roll next to its ends at the front and rear thereof which are adjustable to the bearing portions of dandy-rolls which are of dif-
 85 ferent diameters, for the purpose set forth.

3. The combination, with a dandy-roll supported and constrained for its rotary move-
 90 ment and also for a slight rising-and-falling movement and having its ends and central portion open and unobstructed, substantially as described, of a jet-pipe, as D, longitudinally ranged through the said roll and hav-
 95 ing connected thereto a water-supply pipe, and said jet-pipe being entirely free from and without engagement with any portion of said roll, for the purpose set forth.

4. The combination, with a dandy-roll supported and constrained for its rotary move-
 100 ment and having its ends and central portion open and unobstructed, substantially as described, of a jet-pipe longitudinally ranged through the said roll, and the apron E, opposite the said jet-pipe and outside of the roll, provided with the trough *g*, substantially as
 105 and for the purpose described.

5. The combination, with a dandy-roll suitably supported by its under portion, having its ends and central portion unobstructed, substantially as described, and rollers which
 110 bear peripherally on the portions of the dandy-roll next to its ends at the front and rear thereof, of a jet-pipe longitudinally ranged through the said dandy-roll and having connected thereto a water-supply pipe, and said
 115 jet-pipe being entirely free from and without any engagement with any portion of said roll, for the purpose set forth.

6. The combination, with a dandy-roll supported by its under portion and the uprights
 120 *d d*, each provided with the vertical way *h* and slot *i*, of the blocks *f*, each provided with the tongue *j*, which fits in said way, and the stud *k*, which plays through said slots, and the nut *m*, which engages with said stud, and
 125 the rollers *b b*, mounted for rotation on said blocks *f*, all arranged in the manner and for the purpose set forth.

7. The combination, with a dandy-roll and a support therefor at the under side thereof,
 130 and the uprights *d d*, each provided with a slot *n*, and confining-bolts *p*, whereby said

uprights are adjustable transversely of the axis of the dandy-roll, of the rollers *b b* and supports on which said rollers freely rotate, which supports are vertically adjustable on the said uprights, substantially as described.

5 8. The combination, with the frame of the machine and a dandy-roll supported and confined for a rotary movement and having its ends and central portion open and unob-
10 structed, of a jet-pipe longitudinally extended through said dandy-roll, having connected thereto a water-supply conduit, the apron *E*, having the trough *g*, and the feet *r*, through which said apron is supported from the frame

of the machine, all substantially as and for 15 the purpose described.

9. A dandy-roll having its ends and internal portions open and unobstructed, substantially as described, combined with a support and bearings for constraining the roll for its 20 rotary movement, and a jet-pipe extended into said roll through the open end thereof and supported independently of the roll, for the purposes set forth.

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