

No. 704,079.

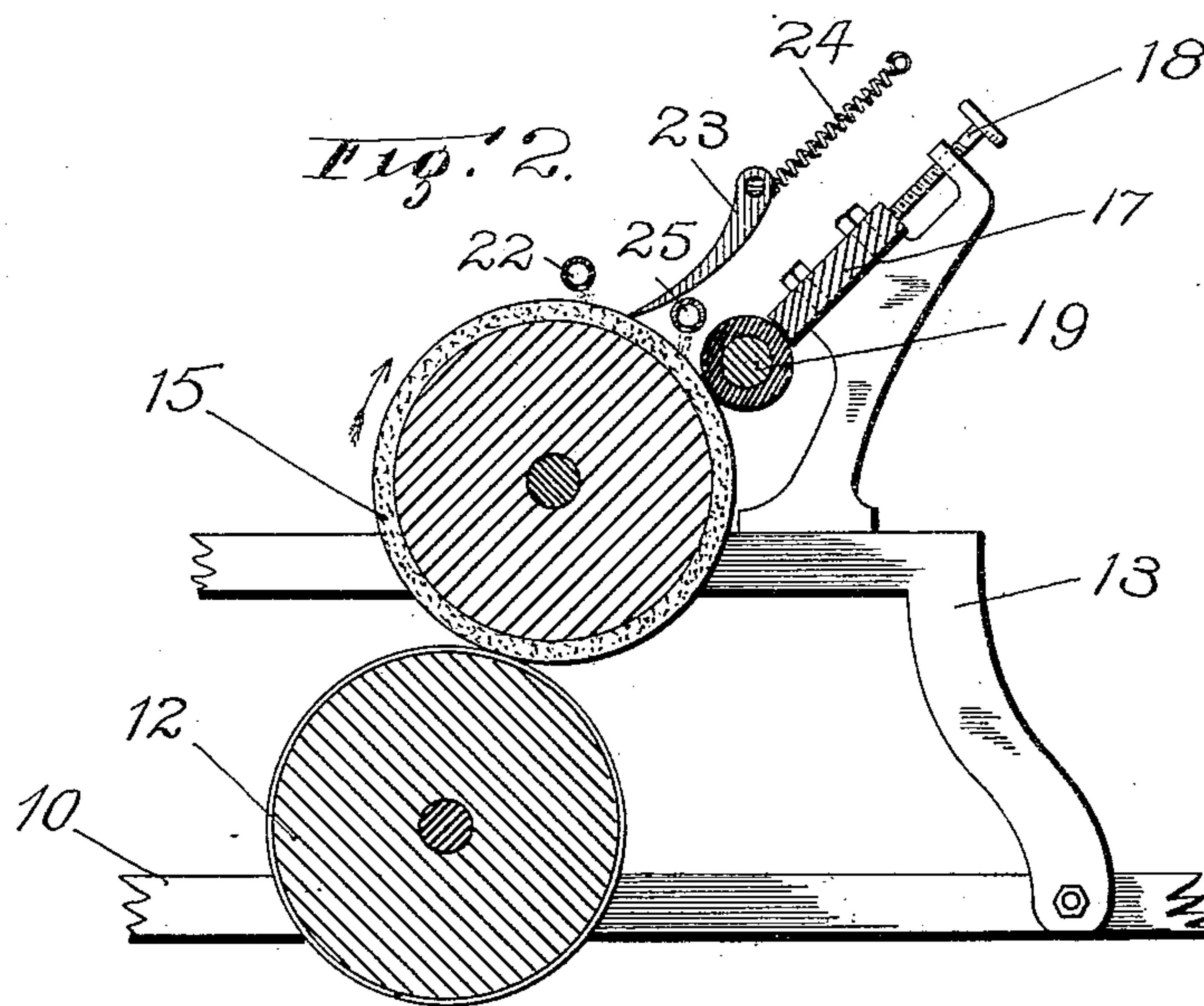
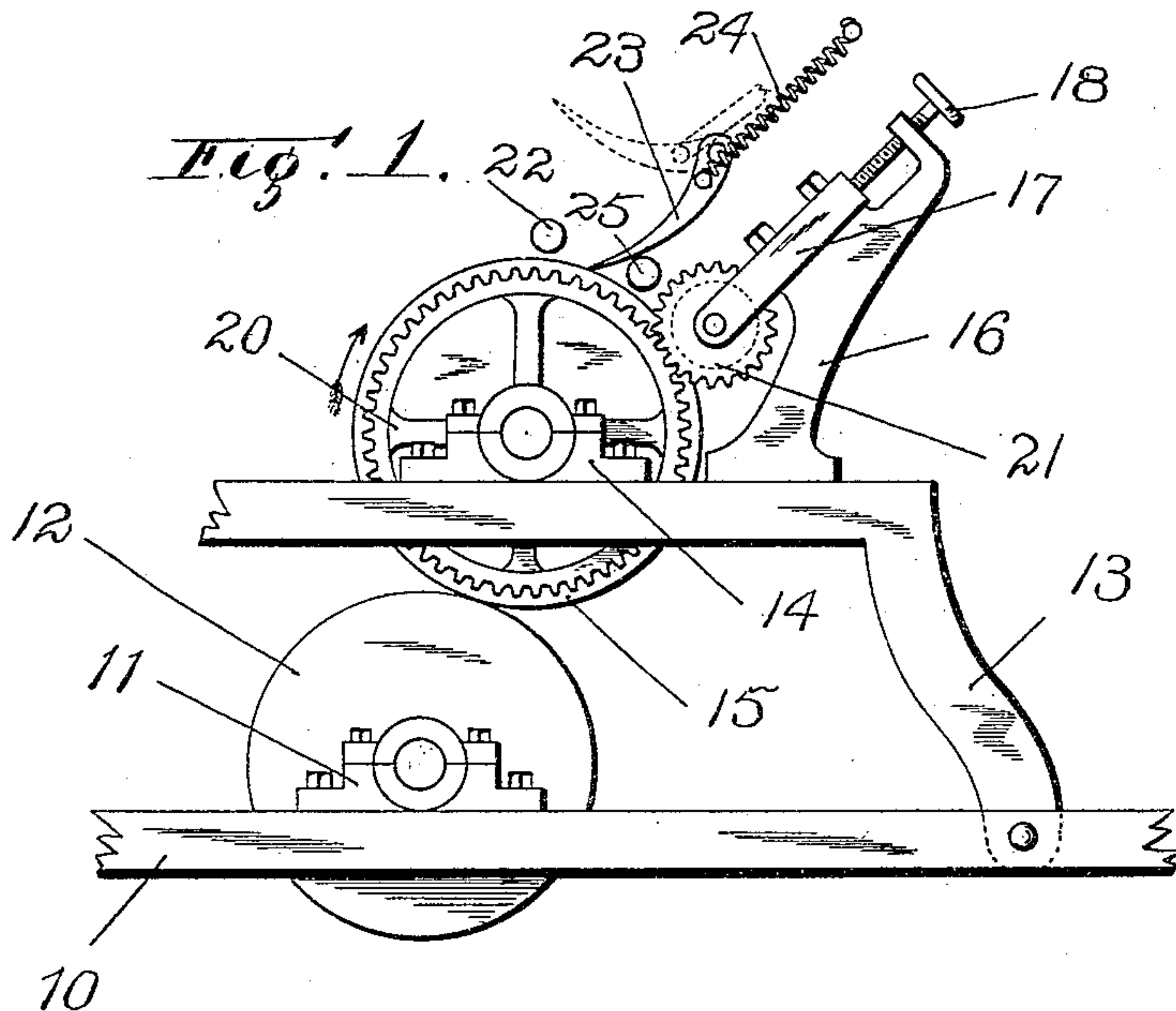
Patented July 8, 1902.

F. E. McEVOY.

COUCH ROLL ATTACHMENT FOR PAPER MACHINES.

(Application filed Feb. 17, 1902.)

(No Model.)



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UNITED STATES PATENT OFFICE.

FRANK E. McEVOY, OF WHEELWRIGHT, MASSACHUSETTS.

COUCH-ROLL ATTACHMENT FOR PAPER-MACHINES.

SPECIFICATION forming part of Letters Patent No. 704,079, dated July 8, 1902.

Application filed February 17, 1902. Serial No. 94,398. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. McEVOY, a citizen of the United States, residing at Wheelwright, in the county of Worcester and State of Massachusetts, have invented a new and useful Couch-Roll Attachment for Paper-Machines, of which the following is a specification.

This invention relates to an attachment for paper-making machines which has been especially designed for cleaning and drying the felt-covered couch-roll which is located above the endless belt or wire upon which the paper is formed.

The especial object of this invention is to provide a guard-board construction or couch-roll attachment in which a roll, preferably formed of flexible material, is employed for cleaning and pressing the surface of the couch-roll.

To this end this invention consists of the attachment for paper-making machines and of the combinations of parts therein, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a side view of sufficient parts of a paper-making machine to illustrate the application of my invention thereto, and Fig. 2 is a transverse sectional view of the same.

In making paper according to the Fourdrinier system the stock or pulp is laid from a suitable trough onto the endless belt or the so-called "wire," which carries the stock over suitable suction devices, which remove the surplus water, so that when the stock has reached the right consistency it is carried by the belt over a roll which receives the pressure of the felt-covered couch-roll, which compresses the stock to form the web of paper. The felt covering of the couch-roll is comparatively heavy and expensive, and in the operation of machines of this class care has to be exercised to keep the surface of the couch-roll properly cleaned and the nap properly smoothed in order to produce a good quality of paper. To accomplish this, it is necessary that the surface of the couch-roll should be washed or showered with water and then scraped dry, so that it will not carry foreign matter again

into contact with the web. In usual practice the cleaning of the couch-roll is accomplished by means of a shower of water from an ordinary perforated pipe, and the surface of the roll is dried off or compressed by a guard-board construction. In practice the guard-board has heretofore ordinarily consisted of a straight-edged plank or board which is set down into engagement with the couch-roll under heavy pressure. The use of the ordinary guard-board I have found to be objectionable on account of the resistance which it opposes to the operation of the machine and by reason of the fact that the scraping action of an ordinary guard-board wears out the coverings of the couch-roll to an undesirable extent. To avoid these objections, a paper-making-machine attachment constructed according to my present invention consists, essentially, of a guard-board which can be set and adjusted in the ordinary manner, but which is provided at its engaging edge with a drying-roll for engaging the surface of the couch-roll. In practice the drying-roll is preferably provided with a surface of rubber or other flexible material, and in order to produce the requisite scraping or fiber-laying action from this drying-roll the drying-roll is preferably driven at a somewhat slower peripheral speed than the speed of the couch-roll. A guard-board as thus equipped will effect a considerable saving in the power required for operating the machine and will efficiently dry and dress the fibers of the couch-roll. In some cases, however, in order to provide for an additional dressing or straightening of the felt fibers of the couch-roll, especially when the coverings are comparatively new, I may provide an additional scraper or doctor, which may be thrown out of operation after the covering of the couch-roll has been properly dressed, and where such additional attachment is employed I preferably provide an additional shower of water for cooperating therewith.

Referring to the accompanying drawings for a detail description of an apparatus constructed according to my invention, 10 designates the frame of the machine, secured on which are boxes 11, in which is journaled the roll 12, which coöperates with the couch-roll.

Pivoted to the frame 10 is a swinging frame 13, carrying the boxes 14, in which is journaled the couch-roll 15. Extending up from the frame 13 are the guard-board brackets 16, and adjustably bolted onto the guard-board brackets 16 is a board 17, which may be set down into place when its bolts are loosened by the hand-wheels 18. These parts may be of substantially the ordinary construction, except that the guard-board 17 is provided at its lower edge with a cleaning or pressure roll 19, which is preferably provided with a covering of rubber or other elastic material.

To secure the proper action from the cleaning-roll 19, I preferably provide gearing for turning the same at a somewhat slower peripheral speed than the speed of the couch-roll. For this purpose a driving-gear 20 is secured to turn with the couch-roll and has a somewhat smaller pitch-diameter than the diameter of the couch-roll. The driving-gear 20 meshes with and drives a gear 21, the pitch-diameter of the gear 21 being somewhat larger than the diameter of the drying-roll 19. By means of this construction the drying-roll will properly press and dry the felt coverings of the couch-roll, while at the same time it will have the necessary drag or scraping action to straighten and comb the fibers of the felt.

The surface of the couch-roll in front of the cleaning-roll 19 is sprayed with water from the ordinary perforated pipe 25. In order to provide for an additional scraping action or for a preliminary dressing of the surface of the couch-roll, I preferably provide a scraping board or doctor 23, which may be held down into operative position by the spring 24, which spring 24 acts to hold the scraper 23 up out of the way when it is thrown up into its inoperative position, as indicated by dotted lines in Fig. 1. When the surface of the couch-roll is being dressed by the scraper 23, the surface of the couch-roll immediately

in front of the scraper 23 may be showered with water from a second perforated pipe 22.

I am aware that numerous changes may be made in practicing my invention by those who are skilled in the art without departing from the scope thereof as expressed in the claims. I do not wish, therefore, to be limited to the particular construction I have herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a paper-making machine, the combination of the couch-roll, and a cleaning-roll arranged to engage the couch-roll and to turn at a different peripheral speed from that of the couch-roll, so as to have a combing action thereon.

2. In a paper-making machine, the combination of the couch-roll, a cleaning-roll, a driving-gear turning with the couch-roll and engaging a pinion turning with the cleaning-roll, said gears being proportioned so that the peripheral speed of the cleaning-roll will be less than that of the couch-roll.

3. In a paper-making machine, the combination of the couch-roll, an adjustable guard-board, a cleaning-roll journaled in the guard-board and having a surface of flexible material, a driving-gear turning with the couch-roll and meshing with a pinion turning with the cleaning-roll, said gears being proportioned so that the peripheral speed of the cleaning-roll will be less than that of the couch-roll, a supplemental scraper or doctor, and two spraying devices for the couch-roll, one for spraying the surface of the couch-roll in front of the drying-roll.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANK E. McEVOY.

Witnesses:

JAMES F. PEMBLE,
JOHN LEARY.