To all whom it may concern:

Be it known that I, HERMAN F. BUSCH, of Millvale, Allegheny county, Pennsylvania, have invented a new and useful Apparatus for Forming Cork Rods, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional side elevation of my improved machine. Fig. 2 is a top plan view. Fig. 3 is a cross-section on the line III-III of Fig. 2. Fig. 4 is an enlarged detail view showing the punching operation, and Fig. 5 is a detail view of an adjustable bevel-wheel which I preferably employ.

My invention relates to the making of corks, and is designed to provide an improved machine by which a square bar or stick of cork may be shaped into a cylindrical blank, from which the cork-blanks are cut transversely.

In the drawings I show four driving-wheels 2, 3, 4, and 5, the inner edges of which are adapted to engage the four faces of the cork stick 6 and feed it forward to the punch. Of these wheels three—namely, 2, 4, and 5—are preferably serrated or roughened on their edges to firmly grip the strip and force it forward. The fourth wheel 3 is preferably plain-faced and engages the rough side of the cork strip. The wheel 2 is mounted on a shaft 7, carried in stationary bearings 8 and 9, and is provided with a driving-wheel, which I have shown as a sprocket-wheel 10. The other three wheels are mounted in a swinging frame 11, which is pivoted at 12, and when swung down into operative position is locked by a pin 13, extending through a link or bar 14, which projects down from the swinging frame. The pin 13 extends through the stationary standard 15 and when it is withdrawn the frame carrying the three wheels 3, 4, and 5 may be swung back into the position shown in dotted lines in Fig. 3, thus giving access to the punch 16, so that it may be sharpened. The smooth-faced wheel 3 is preferably yieldingly pressed against one face of the cork strip by a spring 17, which bears against a lever 18, pivoted at 19 and carrying the straps 20, in which the wheel 3 is supported. This yielding pressure on the wheel allows it to accommodate itself to the irregularities upon the rough side of the cork stick.

In the rear of the four wheels and in line with their pass is mounted the hollow punch 16, having a forwardly-projecting sharpened tip, the punch being preferably tapered toward its front end, so that the cork cylinder 60 will clear the inner face of the punch and allow it to be forced forward easily and without excessive friction. The punch is preferably formed with a base portion 21, which is screwed into the hollow shaft 22, carried in stationary bearings 23 and 24. This hollow shaft 22 is rotated by any suitable connections, and I have shown for this purpose a belt wheel or pulley 25, formed upon it between the bearings. 26 represents oiling devices for the punch-shaft bearings. In order to guide the punched cylinder through the hollow shaft, I preferably secure an inner tube 27 to the base of the punch, this tube extending through the shaft 22 and preferably having its end portion carried in a bearing 28 beyond the end of the shaft.

The feeding device comprising the wheels and their supports may be adjusted toward and from the punch by mounting the frame upon a guideway 28, the frame being secured in adjusted position by bolt 29, extending through a slot 30 in the guide. The bearing 9 also moves in a similar guideway 31 and is secured by bolt 32.

In using the apparatus the cork is cut into sticks substantially square in cross-section, and these strips are fed forward over the shelf 33 and between the wheels of the feeder. The feeder forces the stick forwardly into the punch, which punches it into a cylinder, the scrap portions 34 dropping outside of the punch. The punch rotates at a high rate of speed during this punching operation, and the cylinder is forced forwardly within it and through its hollow shaft. As the sticks are fed forward one after the other, one cylinder serves to eject the preceding one and push it from the rear end of the tube 27. To sharpen the punch, the tilting frame is thrown back and the punch sharpened by a whetstone or other desirable apparatus. As the punch wears in use the feeding device may be adjusted toward it by adjusting the frame carrying the feeder-wheels.

In order to provide for using different sizes
of cork sticks, I preferably provide adjustable bevel-gears in the driving connections between the wheels 2, 4, and 5. One of these adjustable bevel-gears is shown in Fig. 5. The shaft 7 is provided with an externally-screw-threaded collar 35 keyed thereto, and the bevel-wheel 38 is internally screw-threaded, so that it will screw on the screw-threaded sleeve. It is clamped in adjusted position by the nut 39. The screw-threads extend in a left-hand direction and the shaft is rotated in a right-hand or clockwise direction, so that the rotation holds the bevel-wheel in position. Similar bevel-wheels 40, 41, and 42 connect the driving-shafts for the wheels 5 and 4. By adjusting these bevel-wheels the pass between the feeder-wheels may be changed in size, the spring-pressed non-driven wheel 3 adjusting itself to the different sizes.

The advantages of my invention result from the rapidity of action and the uniformity of the product. The square sticks are rapidly transformed into cork cylinders of any desired diameter, which may then be cut transversely and tapered, if necessary, to form corks. The machine is adjustable for different sizes of cylinders and cork sticks, the yielding wheel accommodates the rough side of the stick, and the operation may be carried out without the use of skilled labor.

Many variations may be made in the form and arrangement of the feeding device, the punch and the other parts, without departing from my invention.

I claim—

1. In apparatus for forming cylindrical cork sticks, the combination with a revolving hollow punch, of feeding mechanism comprising a plurality of feed-wheels, one of which is yielding and free to rotate and arranged to exert a yielding pressure upon one face of the cork stick, stationary bearings for said wheel, and a laterally-movable frame in which the other feed-wheels are journaled and which is arranged to be moved to carry said wheels away from the punch and the yielding wheel; substantially as described.

2. In apparatus for forming cylindrical cork sticks, the combination with a revolving hollow punch, of feeding mechanism comprising four wheels arranged to form a feeding pass between their edges, and a swinging frame in which three of the said wheels are carried and which is arranged to be moved to carry said wheels away from the punch; substantially as described.

3. In apparatus for forming cylindrical cork sticks, the combination with a hollow punch, of feeding means, comprising a plurality of wheels arranged at different angles to form a feeding pass between their edges, and a swinging frame in which all but one of said wheels are carried; and which is arranged to be swung laterally to carry said wheels away from the punch; substantially as described.

4. In apparatus for forming cylindrical cork sticks, the combination with a hollow punch, of feeding mechanism consisting of a plurality of feed-wheels, arranged to form a pass between their edges, one of said wheels being yielding, and a swinging frame in which the non-yielding wheels are carried and which is arranged to be moved laterally to carry said wheels away from the yielding wheel and the punch; substantially as described.

In testimony whereof I have hereunto set my hand.

HERMAN F. BUSCH.

Witnesses:

JOHN MILLER,

H. M. CORWIN.