

D. BRENNAN, Jr.
CRUSHING ROLL.

No. 488,867.

Patented Dec. 27, 1892.

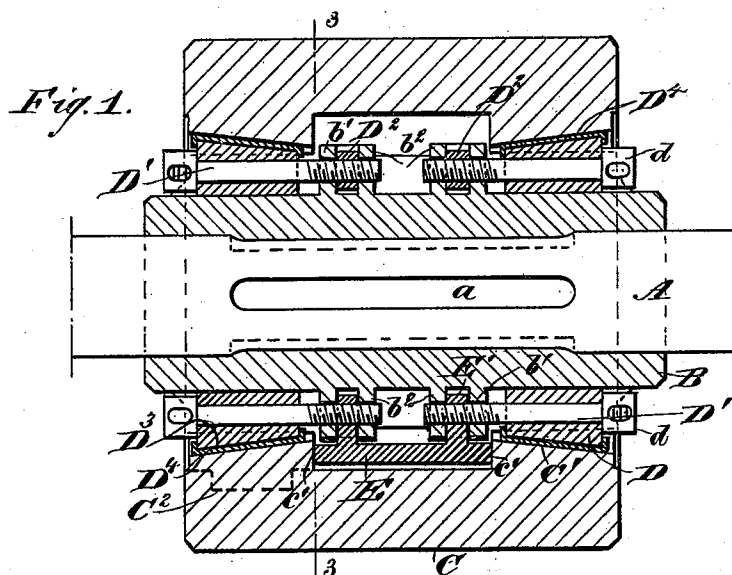


Fig. 2

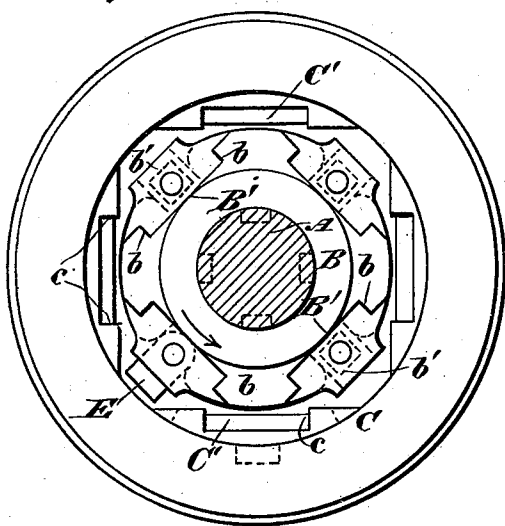


Fig. 3

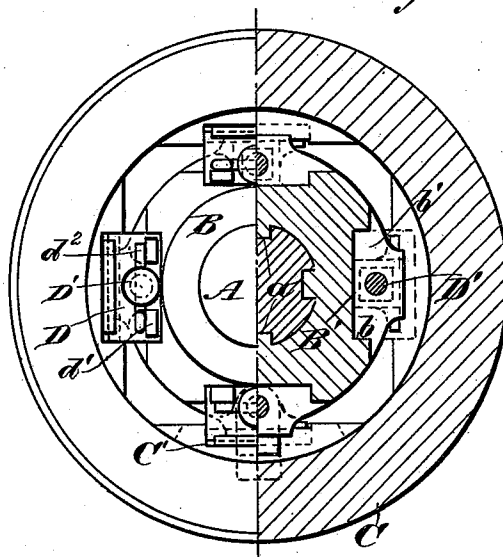


Fig. 4

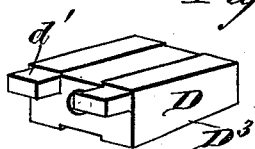


Fig. 5

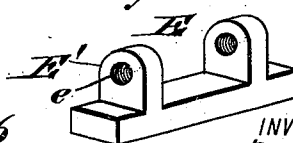
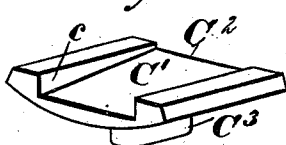


Fig. 6



WITNESSES:

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W. Sedgwick

INVENTOR:

D. Brennan Jr.
BY *Munn & Co.*
ATTORNEYS.

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Fig. 7

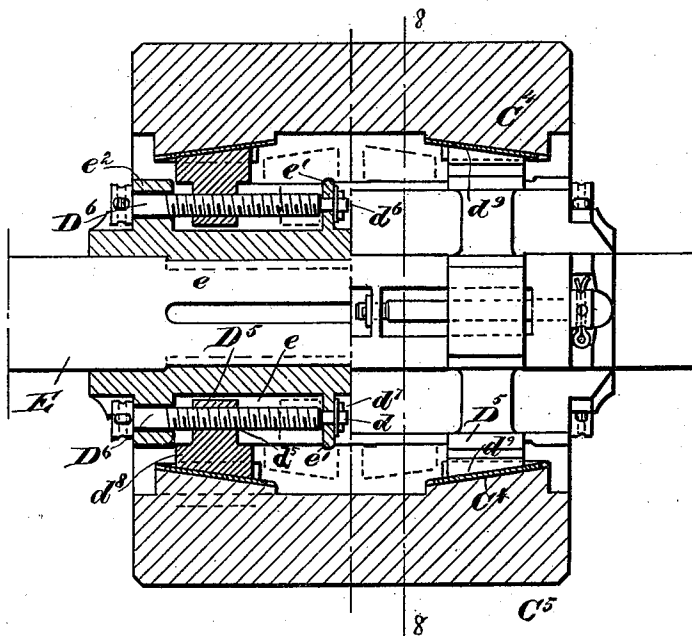
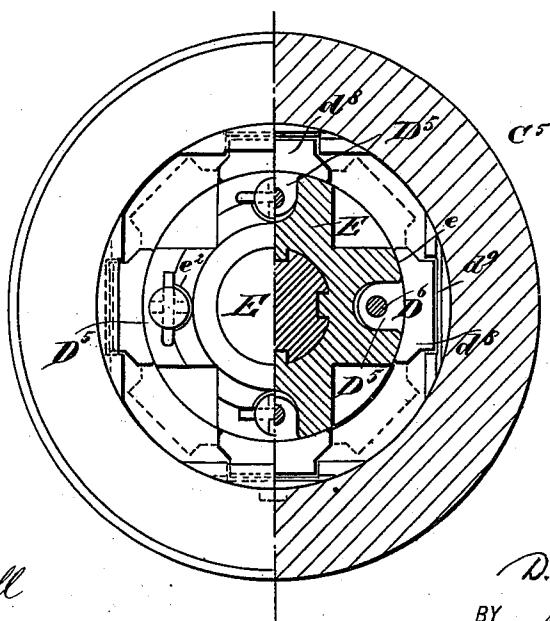


Fig. 8



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UNITED STATES PATENT OFFICE.

DANIEL BRENNAN, JR., OF BAYONNE, NEW JERSEY.

CRUSHING-ROLL.

SPECIFICATION forming part of Letters Patent No. 488,867, dated December 27, 1892.

Application filed February 20, 1892. Serial No. 422,257. (No model.)

To all whom it may concern:

Be it known that I, DANIEL BRENNAN, Jr., of Bayonne, in the county of Hudson and State of New Jersey, have invented a new and Improved Crushing-Roll, of which the following is a full, clear, and exact description.

The invention relates to crushing rolls consisting of a center or core and a removable shell which may be renewed when worn.

10 The object of the invention is to improve crushing rolls of this character, to the end that the shell may be accurately and securely fixed to the center without the necessity of boring the former, and readily removed when
15 worn.

The invention is distinguished by a novel manner of arranging and securing the wedge blocks, and by a keeper, which assures the proper position of the shell longitudinally of the center, all as hereinafter particularly described and defined in the claim.

20 Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

25 Figure 1 is a longitudinal sectional view; Fig. 2 is an end elevation, the wedge blocks being omitted, the view showing the manner of fitting the shell on the center; Fig. 3 is an end elevation of the roll complete, one half being in section; Fig. 4 is a perspective view of one of the wedge blocks; Fig. 5 is a like view of the keeper block employed to prevent longitudinal play of the shell; Fig. 6 is a perspective view of a detail, to be hereinafter referred to; Fig. 7 is a view showing the shell in longitudinal section, and the center and fastening devices partly in section, and partly in side elevation; and Fig. 8 is an end elevation, one half being shown in section on line 8—8 of Fig. 7.

30 In constructing a crushing roll in accordance with my invention, reference being had specially to Figs. 1 to 6, a sleeve or hub B is cast on the shaft A, the latter being formed with depressions *a*, into which the metal of the sleeve runs in being cast, the two forming a solid, practically integral center, which term will be used hereinafter to designate the shaft and sleeve. To the center thus formed, the shell C is removably held by means of wedge blocks D which are held in place and

driven home by screw bolts D', the latter having engagement with nuts which are held against movement as hereinafter explained. 55

The wedge blocks D are adapted to fit recesses formed partially in the exterior of the center and partially in the interior of the shell C. Thus B', indicates the bottom walls of the recesses formed in the exterior surface 60 of the center, said walls ranging inward in a horizontal direction from the ends of the roll; *b* indicates the side walls of the recesses, and *b'* lugs forming the walls at the inner ends of such recesses. Within or back of each of the lugs *b'*, a lug *b*² is cast on the center, in alignment with said lugs *b'*, and between adjacent lugs *b'*, *b*², a nut D², may be fitted or cast for engaging the inner end of the bolt D'. The recesses formed in the shell 70 C, for accommodating the wedge blocks D have inclined bottom walls C', and side walls *c*. In connection with the shell and center thus constructed a keeper block E is employed, as shown best in Figs. 1 and 5, the same being of a length to fit snugly between two opposed shoulders *c'*, (Fig. 1) formed on the inner surface of the shell at the inner terminals of the inclines C'. From one side of the keeper E, lugs E' project at right angles, and 80 are formed with threaded apertures *e*, which lugs fit the spaces formed by the lugs *b'*, *b*², and with the body of the keeper block fitted snugly between opposed shoulders *c'*, the proper position of the shell longitudinally of the center or core will be insured, and all longitudinal play prevented. 85

The keeper block E, may be arranged in connection with the particular sets of lugs *b'*, *b*², that will receive it most snugly, and between 90 the remaining lugs *b'*, *b*², the nuts D² are fitted or cast. In practice, the keeper E having been thus fitted in place on the center, the latter is passed into the shell in the position shown in Fig. 2, and is then given a partial 95 rotation to bring the surfaces B', C', of the shell and center opposite each other, and at the same time the keeper E will be brought between two opposing shoulders *c'*. The wedge blocks D are now placed between opposing surfaces B', C', and forced home by the bolts D' which pass longitudinally through and also through the lugs *b'*, *b*² and the keeper lugs E' and the nuts D², the in- 100

inclined surfaces D^3 of the wedge blocks causing the same to be firmly wedged in place. The heads d of the bolts D' , lie partly below projections d' , on the wedge blocks, and a cotter or key d^2 passed through a transverse hole in said head will engage such projections and prevent the bolt from turning. A liner D^4 may be employed with advantage beneath each wedge block.

If desired, as shown in Fig. 6, and indicated in Fig. 2, at the bottom, and at the left in Fig. 1, the inclined surfaces C' , and side walls c may be formed on a separate plate C^2 , which is fitted to the inner side of the shell, and formed with an extension C^3 at the back which is received in a corresponding recess in said shell.

I have shown the wedge blocks used at both ends of the roll, but where the rolls are not long the invention may be embodied in the same at one end only.

It will be seen that I do not rely on the mere frictional contact between the wedge blocks and the opposed surfaces of the center and shell, such opposed surfaces in my improvement being flat instead of following the general curve of the parts, thus positively preventing any independent rotary movement of the shell, and this movement is further guarded against by the wedge blocks projecting into, or positively interlocking with both the center and shell.

I do not claim broadly the use of a wedge-like part for securing the shell of a crushing roll to a center.

With wedge blocks constructed and arranged as described, in addition to preventing any independent movement of the shell, even under great pressure, they also enable the shell to be accurately set concentric to the axis of the roll without the necessity of boring it to a proper relation to the center on which it is to be secured.

In the modified construction shown in Figs. 7 and 8, the wedge blocks D^5 are formed with threaded apertures d^5 , for receiving the actuating screw bolts D^6 , said blocks being movable in longitudinal recesses e , formed in the center E . The bolts D^6 pass through apertures e^2 in the center E , and their inner ends d^6 , are reduced and held by cotters d^7 to flanges e' , that rise radially from said centers, whereby the bolts are held against longitudinal movement so that their rotation will actuate the wedge blocks. The enlarged heads d^8 of the wedge blocks follow the lines of the center E at their backs as at e , to seat themselves fairly thereon, and their inclined faces d^9 bear against corresponding surfaces C^4 on the interior of the shell C^5 . The surfaces C^5 on the shell incline or converge toward the ends of the roll, and the faces C^4 are correspondingly inclined, whereby an outward movement of the wedge blocks effect the locking of the shell, instead of an inward movement as in the form shown in Figs. 1 to 6. In securing this form the center is inserted in the shell as

in the form first described, and then given a partial turn, and the bolts are turned to actuate the wedges so as to center and secure the shell.

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

1. In a crushing roll, the combination, with a center and a separate shell therefor, of interposed centering wedge blocks, and means for locking the shell against longitudinal movement, substantially as described.

2. The combination in a crushing roll, of a center, a separate shell removably held thereon, interposed wedge blocks having flat faces and fitting corresponding surfaces formed at intervals on the center and shell, and means for securing said blocks in position, substantially as described.

3. The combination in a crushing roll, of a center, a separate shell removably held thereon, interposed wedge blocks which extend into recesses formed in the inner surface of the shell and in the inner surface of the center, at intervals there-around, thereby positively interlocking with and engaging said center and shell, substantially as described.

4. The combination in a crushing roll, of a center, a separate shell thereon, interposed wedge blocks, screw bolts for securing the wedge blocks, and nuts with which the screw bolts engage, said nuts being held by said center against movement longitudinally of the roll, substantially as described.

5. The combination in a crushing roll, of a center having lugs formed on its exterior, a separate shell thereon, wedge blocks interposed between the shell and center, and screw bolts extending through the wedge blocks and through nuts arranged between the lugs formed on the center and engaging the inner ends of the screw bolts, substantially as described.

6. The combination in a crushing roll, of a center having flat surfaces on its exterior at intervals there-around, a separate shell held thereon, and having flat inclined surfaces on its inner side opposite the flat surfaces of the center, a series of wedge blocks adapted to the flat surfaces of both the center and shell, and screw bolts and nuts for the wedge blocks, substantially as described.

7. The combination in a crushing roll, of a center, and a separate shell removably held thereon, the two having opposed flat faces at intervals there-around at each end, and series of interposed wedge blocks adapted to said surfaces, and means for securing the same, the said blocks serving to accurately center the shell and serving when secured to prevent independent rotary movement thereof, substantially as specified.

8. The combination in a crushing roll, of a center, a shell removably held thereon, the center having recesses in its exterior and the shell having opposed recesses in its exterior, the bottom walls of such recesses being flat,

and wedge blocks interposed between the center and shell and extending into the recesses in both, substantially as described.

5 9. The combination in a crushing roll, of a center, and a separate shell thereon, and means for securing the shell in place, said means including an interposed keeper block engaging both the center and shell, and preventing longitudinal movement of one relatively to
10 the other, substantially as described.

10 10. The combination in a crushing roll, of a center, and a separate shell thereon, and means for securing the shell in place, including an interposed keeper block fitted between
15 opposing shoulders on the shell, and having lugs which fit between spaced lugs on the center, substantially as described.

11. The combination in a crushing roll, of

a center, formed with lugs on its exterior, a separate shell removably held thereto, wedge 20 blocks interposed between the center and shell at both ends of the roll, a keeper block also interposed between the center and shell, and formed with lugs having threaded apertures and fitting between longitudinally 25 aligning lugs on the center, and screw bolts extending through the wedge blocks, two longitudinally aligning screw bolts engaging the threaded apertures of the keeper block and the remainder engaging fixed nuts, substan- 30 tially as described.

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Witnesses:

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