(No Model.)

F. CAZIN.

CRUSHING ROLLS.

No. 553,391. Patented Jan. 21, 1896.

Fig. 1

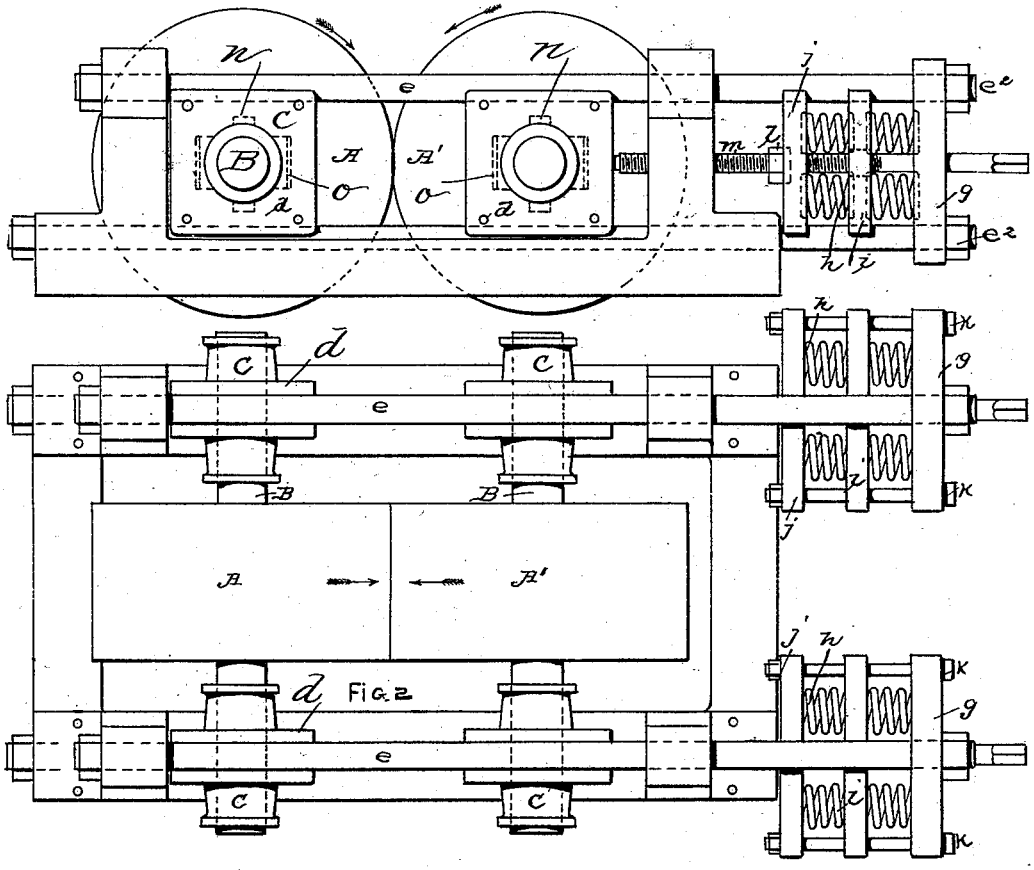

Fig. 3

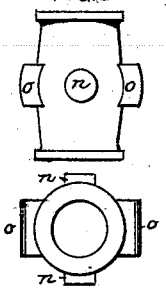

Fig. 4

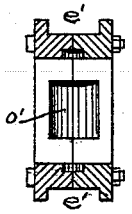

Fig. 5

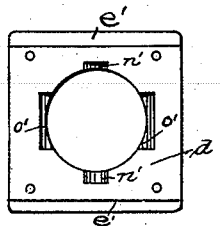

Fig. 6

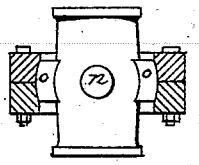

Fig. 7

Witnesses
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UNITED STATES PATENT OFFICE.

FRANZ CAZIN, OF DENVER, COLORADO, ASSIGNOR TO THE COLORADO IRON WORKS, OF SAME PLACE.

CRUSHING-ROLLS.

SPECIFICATION forming part of Letters Patent No. 553,391, dated January 21, 1896.

Application filed August 16, 1895. Serial No. 559,513. (No model.)

To all whom it may concern:

Be it known that I, FRANZ CAZIN, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Crushing-Rolls, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improved crushing-rolls, and it is my object to provide a very simple arrangement for applying tension to the rolls by means of nests of springs and to further provide for the irregular opening of the rolls and the consequent irregular separation of the axles at one side or the other by providing the axles with trunnion-boxes having universal connection with trunnion-box frames.

In the accompanying drawings, Figure 1 is a side elevation of the rolls. Fig. 2 is a plan of the same. Figs. 3 and 4 are detail views of the trunnion-box. Figs. 5 and 6 are details of the trunnion-box frame, and Fig. 7 shows the trunnion-box and frame together with the frame in section.

In the drawings the rolls are shown at A A', which are driven by power applied to one or both of their shafts and revolving as shown by the arrows. These rolls are carried by axles B, which turn in trunnion-boxes C. These boxes, as shown in Figs. 3 and 4, have pivots *n* projecting from the top and bottom and lugs *o* projecting from each side at right angles to the pivots, and these trunnion-boxes are fitted to frames *d*, made of two parts bolted together, as shown in Figs 5, 6 and 7. These frames have pockets *n'* for the reception of the pivots *n* of the trunnion-boxes and enlarged pockets *o'* for the reception of the lugs *o*. The pockets *o'* are curved in cross-section and allow a pivotal movement of the trunnion-box on its pivots in a horizontal direction. The frames *d* are grooved at top and bottom on the outer side and are fitted to be placed between the side bars *e* of the main frame. These grooves *e'* of the frames *d* serve to prevent displacement from the main frame.

As shown in Figs. 1 and 2, the side bars *e* on each side extend beyond the frame proper and are connected by a plate *g*, this plate being prevented from displacement by nuts e^2. These plates *g* form the back rest of a nest of springs *h*, which are held between said plate *g* and a second plate *j*, with a third plate *i* interposed between independent springs of the nest. End rods *k* extend between the plates *g* and *j*, having heads on one end and nuts on the other. These rods serve to support the plates and confine them against spreading movement, but do not interfere with the inward movement of said plates. The springs are suitably compressed before introduction between the plates, and the pressure of these springs is exerted against the rolls through a screw *m*, one being provided for each set of springs and bearing centrally against the nearest frame *d*, carrying the trunnion-box. A nut *l* on the screw *m* is seated against the plate *j*, and the pressure may be increased or diminished by screwing up or unscrewing the screw *m*.

It will be seen that the rolls after having been adjusted will keep the same distance apart until a piece passes between them too strong to be broken when the springs will be compressed and the rolls will open sufficiently to let the piece through. If this piece happens to be near one end of the rolls the springs on that side only will be compressed, and in this event only the trunnion-box at one end will be moved or will be moved to a greater extent than the box on the opposite side. By reason of the free horizontal movement permitted the trunnion-box all cramping of the parts is prevented and there is no danger of straining or rupturing the parts.

I do not limit myself to the exact construction of the trunnion-box and its frame, as I may provide a universal connection, if desired, though I prefer the construction shown.

What I claim is—

1. In combination, the supporting frame, the pair of trunnion box frames having free horizontal sliding movement and the pair of trunnion boxes pivoted within said frame and having swinging movement in the same direction as said frame and the roller journaled in said boxes, substantially as described.

2. In combination, with a pair of rolls and with the axles thereof, a trunnion box frame

made in two parts and a trunnion box having pivots entering recesses in the frame and lugs entering other recesses in said frame, substantially as described.

3. In combination, the pair of rolls, the sliding trunnion frame, the side bars, the backing plate secured to the end of said bars, the plate *j* sliding on said bar, the intermediate plate *i*, the nest of springs interposed between the plate *i* and the backing plate, and the screw rod under the tension of said springs adapted to bear on said trunnion frame, and the connection between said rod and the springs whereby the tension on said rod can be increased or diminished, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANZ CAZIN.

Witnesses:
J. H. HAMMOND,
S. H. NESMITH.