

No. 717,069.

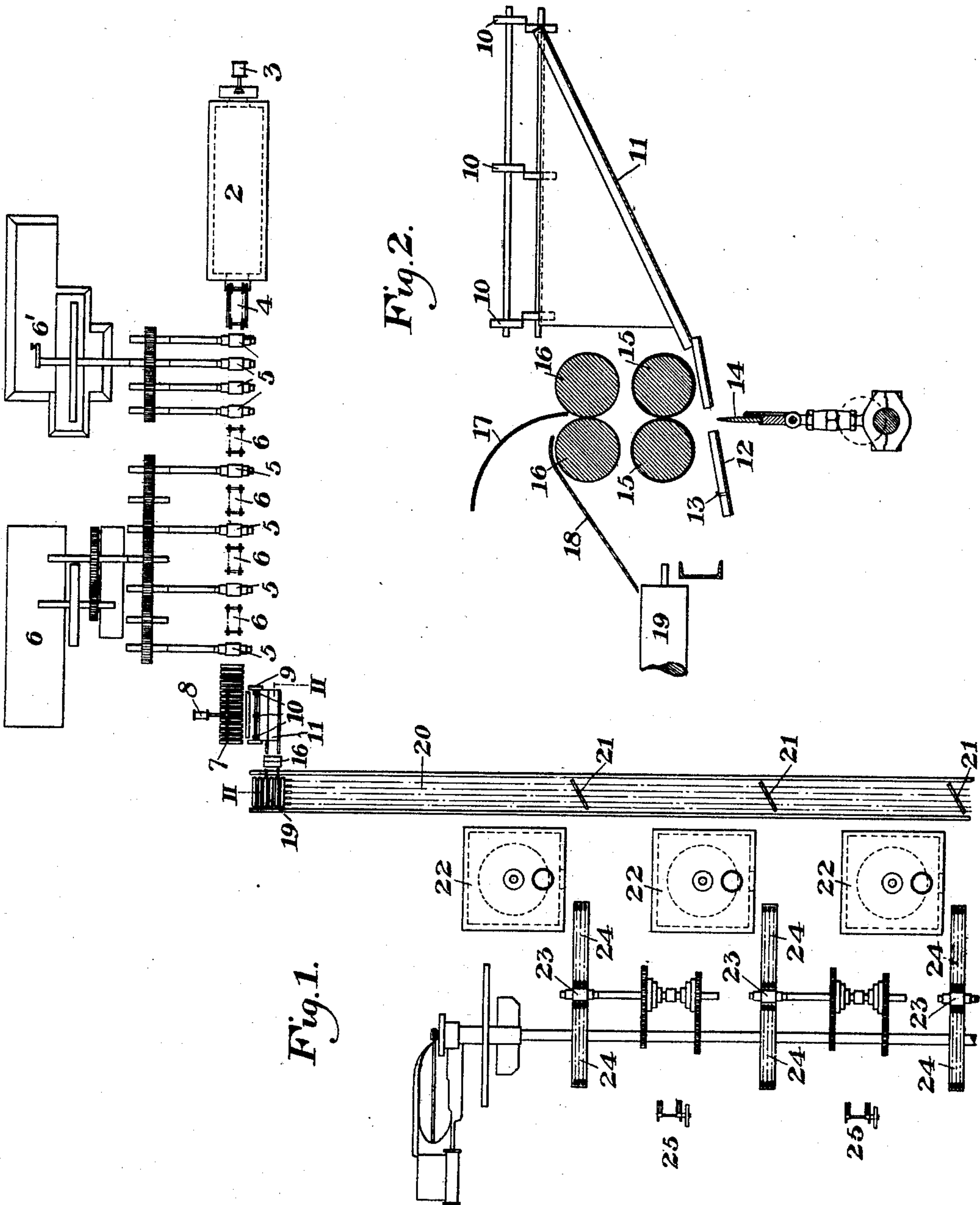
Patented Dec. 30, 1902.

C. W. BRAY.

APPARATUS FOR MAKING BLACK PLATES OR SHEETS.

(Application filed Mar. 15, 1902.)

(No Model.)



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR MAKING BLACK PLATES OR SHEETS.

SPECIFICATION forming part of Letters Patent No. 717,069, dated December 30, 1902.

Application filed March 15, 1902. Serial No. 98,361. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. BRAY, of  
Pittsburg, Allegheny county, Pennsylvania,  
have invented a new and useful Apparatus for  
Making Black Plates or Sheets, of which the  
following is a full, clear, and exact descrip-  
tion, reference being had to the accompanying  
drawings, forming part of this specification,  
in which—

Figure 1 is a diagrammatic plan view of my  
improved apparatus; and Fig. 2 is a similar  
view, on an enlarged scale, on the line II II of  
Fig. 1.

My invention relates to the production of  
black plates or sheets; and it is designed to  
cheapen the cost of such operations, to re-  
duce the number of heatings, and also the  
number of separate rolling operations.

In the drawings, 2 represents a continuous-  
heating furnace for plates or bars, having a  
feeding device 3 at its entering or rear end.  
A positively-driven feed-table 4 extends from  
the other end of this furnace to a continuous-  
roughing mill. I have shown this mill as  
containing eight stands of plain-faced two-  
high rolls 5, with feed-tables 6 between some  
of the sets. The number of stands may be  
changed and the feed-tables may or may not  
be used, as desired. The rolls may be driven  
in any suitable manner, and I have shown  
them as having gear connections with en-  
gines 6' 6'.

The sheet-bar issuing from the last set of  
rolls of this mill is fed forwardly upon a roller-  
table or other support 7, on which it may be  
fed sidewise by a hydraulic pusher 8 or other  
suitable mechanism. Along one side of the  
feed-table extends a rotary shear 9, having  
three sets of cutting-disks 10, the middle pair  
of which divides the sheet-bar centrally and  
transversely, while the other pairs trim its  
ends. The two halves of the severed sheet-  
bar drop upon an inclined chute 11, leading  
to a slotted support 12, having stops 13. The  
two halves are matched above each other  
upon this support and are then doubled by  
means of the doubling-blade 14, which forces  
them upwardly between the grooved rollers  
15 and thence through the plain-faced rollers

16. This doubler is preferably constructed  
in accordance with my United States Patent  
No. 698,438, dated April 29, 1902. The dou-  
bled pack of fours thus formed strikes a de-  
flector 17 and drops upon an inclined guide  
18, which directs the pack upon a roller-ta-  
ble 19, which leads to chain conveyers 20.  
The conveyer-table is provided with switch de-  
vices 21, by which the pack may be switched  
off at any one of a number of furnaces 22.  
Adjacent to each of these furnaces is a finish-  
ing-mill having two-high reversing-rolls 23,  
with feed-tables 24 on each side thereof.  
From these finishing-mills the packs may be  
taken to squaring-shears, (shown at 25.)

In making black plates or sheets with my  
improved apparatus I may use the ordinary  
sheet-bars, which are preferably sheared of a  
slightly-greater width than that of the sheets  
to be made. These bars are charged into the  
rear end of the continuous-heating furnace  
and thence pass through the continuous-  
roughing mill.

The number of passes in this mill may be  
varied; but in starting with a sheet-bar—  
which is, for example, twenty and one-half  
inches long, by eight inches wide, by three-  
eighths of an inch thick—I preferably reduce  
the same in the roughing-mill to about sixty  
inches long and about nineteen gage, the  
width not having been materially changed.  
The long bar thus formed is then pushed side-  
wise to the slitting-shears, and thus cut into  
two pieces and the ends trimmed at the same  
time. The number of shears may of course  
be varied, as desired, according to the length  
of the bar. The severed sections drop from  
the shear onto the doubler-support and are  
matched. The matched pack is then doubled  
and delivered to the conveyer, whence it  
passes to any one of the reheating-furnaces.  
The doubled packs are then reheated and  
rolled in the finishing-mills to the proper  
length to give the desired gage, and the packs  
are then taken to the squaring-shears.

The advantages of my invention result from  
the rapidity of operation, the increase in out-  
put, and the low labor cost. The doubling  
of the severed sections gives a pack which



will not become displaced in rolling, and hence the difficulty in matching, reheating, and rolling is obviated.

Many variations may be made in the form and arrangement of the mills, conveyers, shears, and doubler without departing from my invention.

I claim—

1. In apparatus for manufacturing black plates or sheets, a roughing-mill, shear mechanism arranged to trim and sever the sheet-bar transversely, a matching and doubling apparatus, and mechanism for transferring plates from the roughing-mill to the shear mechanism, and from the shear mechanism to the matching and doubling apparatus, substantially as described.

2. In apparatus for manufacturing black plates or sheets, a continuous mill comprising a series of sets of roughing-rolls arranged in tandem, shear mechanism at the end of the series arranged to sever the bar transversely, a doubling apparatus, and mechanism for transferring the metal from the continuous mill to the shear mechanism, and from the shear mechanism to the doubling apparatus; substantially as described.

3. In apparatus for manufacturing black plates or sheets, a continuous mill compris-

ing a series of sets of roughing-rolls arranged in tandem, mechanism at the end of the roughing-rolls arranged to move the bar at an angle to its path through the mill, shear mechanism arranged to sever the bar transversely during its movement, matching and doubling apparatus, and mechanism for transferring the severed sections thereto; substantially as described.

4. In apparatus for manufacturing black plates or sheets, a continuous mill comprising a series of sets of roughing-rolls arranged in tandem, shear mechanism at the ends of the roughing-rolls arranged to simultaneously sever the bar transversely and trim its ends, a matching and doubling apparatus, mechanism for transferring the metal from the continuous mill to the shear mechanism and from the shear mechanism to the matching and doubling apparatus, and mechanism for transferring the doubled packs to a finishing-mill; substantially as described.

In testimony whereof I have hereunto set my hand.

C. W. BRAY.

Witnesses:

H. M. CORWIN,  
L. M. REDMAN.