

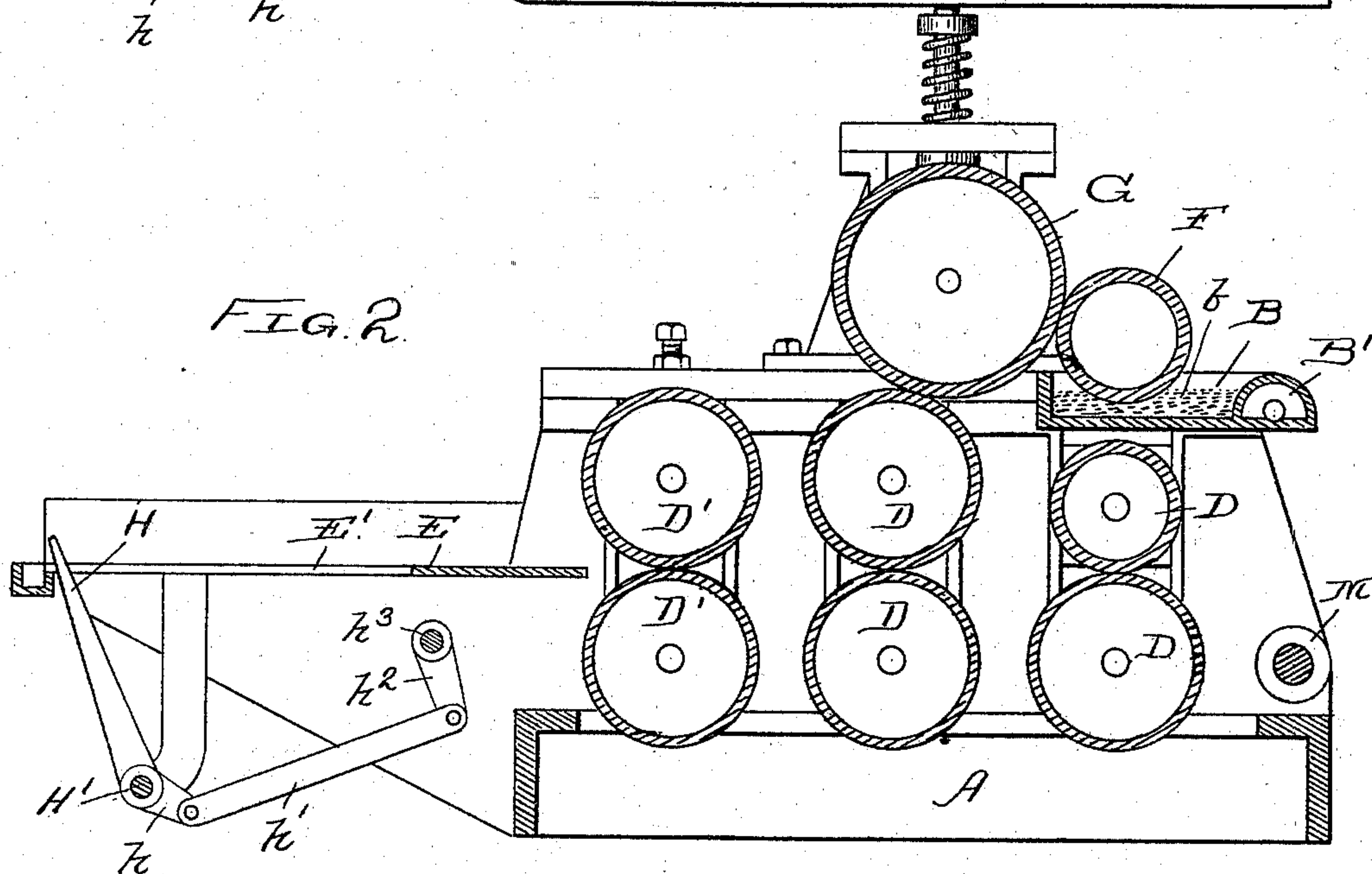
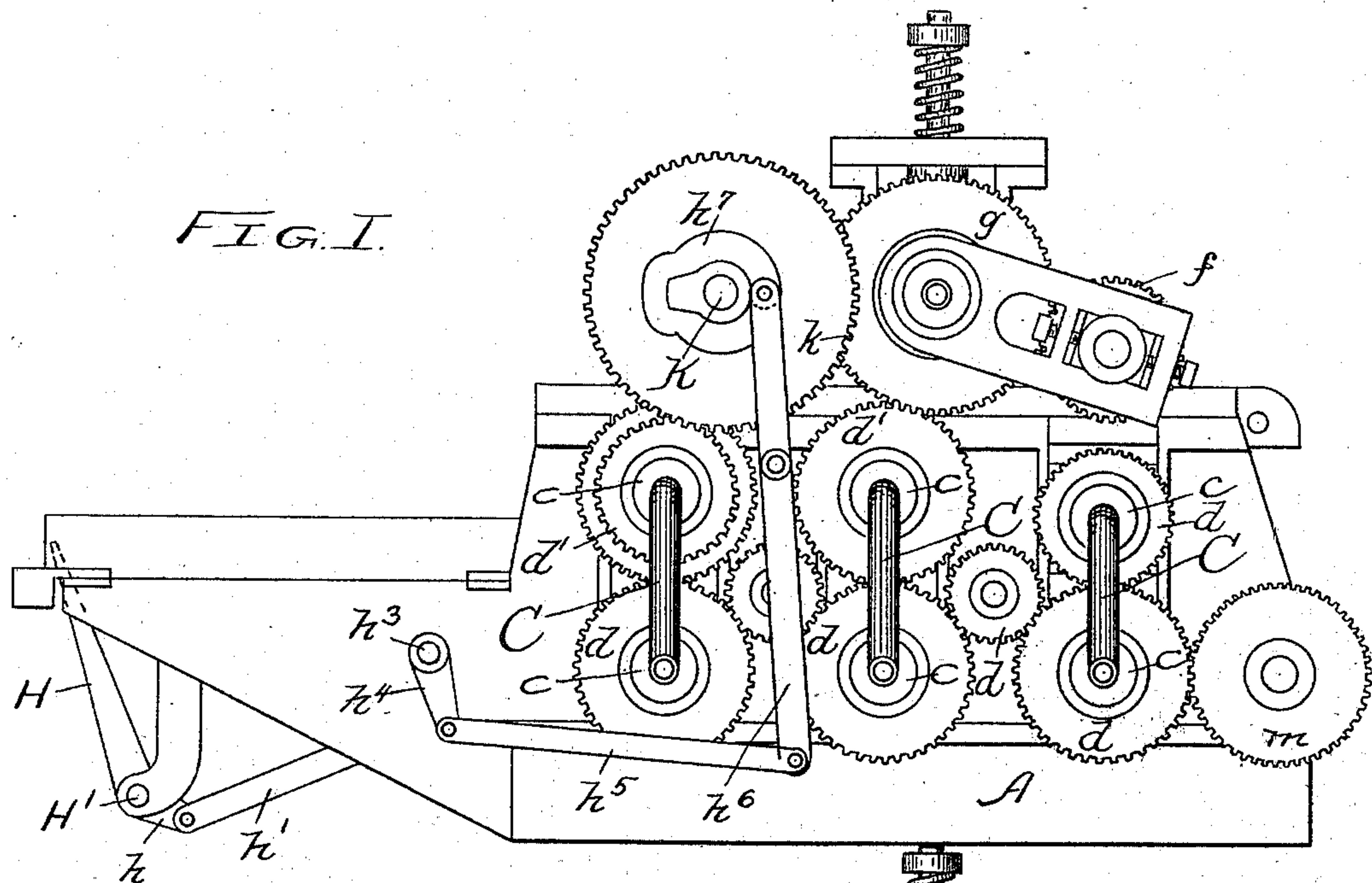
(No Model.)

E. NORTON.

TIN PLATE DRYING AND FLUXING MACHINE.

No. 535,393.

Patented Mar. 12, 1895.



WITNESSES:
Sew. C. Curtis
H. W. Munday

INVENTOR:
EDWIN NORTON
BY Munday, Everts & Adcock.
HIS ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDWIN NORTON, OF MAYWOOD, ASSIGNOR TO THE NORTON BROTHERS, OF CHICAGO, ILLINOIS.

TIN-PLATE DRYING AND FLUXING MACHINE.

SPECIFICATION forming part of Letters Patent No. 535,393, dated March 12, 1895.

Application filed June 18, 1894. Serial No. 514,899. (No model.)

To all whom it may concern:

Be it known that I, EDWIN NORTON, a citizen of the United States, residing in Maywood, in the county of Cook and State of Illinois, have
5 invented a new and useful Improvement in Tin-Plate Drying and Fluxing Machines, of which the following is a specification.

My invention relates to machines for drying and fluxing the wet washed and pickled sheets
10 of steel or iron preparatory to tinning the same, and more particularly to improvements upon the drying and fluxing machine as shown and described in Letters Patent No. 488,025, dated December 13, 1892. In the machine
15 shown and described in said patent the tank or tanks for containing the heated palm oil or other flux were located beneath the path of the wet sheets through the machine, and the water dripping or driven off from the sheet tended
20 to a greater or less extent to accumulate in and mix with the oil in the tank to cool the same and to cool the rolls and to cause a great amount of steam to be developed in and through the oil from the water.

25 The object of my present improvement is to overcome this objection or difficulty, and leave a free means of escape for all water or moisture draining or dripping off the plates of metal passing through the machine, and at the
30 same time keep the supply of oil free from water or moisture. This result I accomplish, and herein my invention consists by so arranging or combining the flux tank with the rolls that it is located above the rolls or above
35 the path of the wet sheets through the machine, the oil or flux being transferred to the fluxing rolls from the roll which revolves in the flux tank by means of a transfer roller. By this new combination of these particular
40 devices I accomplish the important result of keeping the flux tank entirely free from water, and also avoid the unnecessary heating or converting into steam of the water which naturally drips or drains off the plates as they
45 pass through the machine or between the heated and oil coated rolls, thus very greatly increasing the capacity of the machine as well as improving its operation or quality of work performed.

50 In the drawings forming a part hereof Figure 1 is a side elevation, and Fig. 2 a longi-

tudinal vertical section of a machine embodying my invention.

In the drawings A represents the frame of the drying and fluxing machine. 55

B represents the flux tank containing palm oil or other suitable oil or flux *b*.

D D and D' D' are the pairs of heated fluxing and drying rolls, the same being hollow so that they may be heated by steam. 60

C are the steam pipes connected to the several pairs of hollow heated fluxing and drying rolls D D' by suitable stuffing boxes *c*.

E is the feed table.

The fluxing tank B is provided with a steam 65 chamber B' for heating the same, or the flux contained therein. The flux tank B is located above the path of the sheets of iron or steel through the machine, and, preferably, directly above one pair of the fluxing rolls, substantially as indicated in the drawings. 70

F is a flux feed roll revolving in the flux tank B, so that it is in fact immersed in the oil or flux and which serves to feed or supply the fluxing rolls D D' through the medium of 75 the transfer roller H which revolves in contact with both the feed roller F and with one of the fluxing rolls D, by which fluxing roll the flux or oil is transferred to the surface of the other fluxing rolls by direct contact with 80 this first one, or by contact with the sheet, to the upper and lower surfaces of which the flux or oil has been transferred by the first pair of fluxing rolls D.

The pair of steam heated rolls D' D' adjacent to the feed table or chute E are preferably used simply as drying rolls and no flux or oil need be supplied to them. 85

H is the sheet feeding device by which the wet pickled sheets of iron or steel, which are 90 to be fluxed preparatory to tinning, are automatically fed to the drying and fluxing machine. The sheet feed device may be of any suitable construction, but consists preferably of one or more, preferably two, vibrating arms 95 secured to a rock shaft H' below the feed table, and which work back and forth in suitable slots or openings E' in the feed table E. The vibrating feeder arms H are operated automatically at suitable intervals by any convenient connecting mechanism, such for example as an arm *h* on the rock shaft H', piv- 100

oted link h' , arm h^2 on the rock shaft h^3 , arm h^4 on said rock shaft h^3 , pivoted link h^5 and vibrating lever h^6 which is actuated by a cam h^7 on the driving shaft K. The various rolls

5 D, D, D' D', F and G are all driven by suitable connecting gear d d' , f , g , k .

M is a delivery roll, the same being revolved by a gear m on its shaft revolving with one of the gears d .

10 The operation is as follows:—The wet sheets which are to be dried and fluxed preparatory to tinning, are taken by the operator from the water tank containing them and placed one by one on the feed table E in front of the
15 feeder H. The intermittent movement of the feeder H automatically feeds or pushes the sheet forward into the bite of the steam heated drying rolls D' D' which serve to free the sheets from a large part of the water or moist-
20 ure upon their surfaces. By these drying rolls D' D' the sheet is fed forward into the bite of the front pair of drying and fluxing rolls D D from whence it passes into the next pair through the machine. The surface of the up-
25 per one of the first fluxing rolls is continually supplied with palm oil or other flux from the flux tank B through the medium of the feed roll F and transfer roll G. From the sur-
30 face of this first upper fluxing roll D the oil or flux is transferred to the lower fluxing roll of this pair at the intervals when no sheet is between these rolls; and at the intervals when a sheet is between these two first fluxing rolls the flux is transferred from the surface of both
35 rolls of this pair to the upper and lower surfaces of the sheet; and from the upper and lower surfaces of the sheet, the oil or flux is transferred to the second or next pair of fluxing rolls D D, so that all four of the fluxing
40 rolls are kept well coated with the oil or flux and the flux thus thoroughly and evenly distributed over both surfaces of every sheet by the combined action of the two pairs of fluxing rolls. As all four of the fluxing rolls D
45 D are heated, they also operate to drive off any remaining water or moisture that may be on the sheet after passing through the first pair of drying rolls D' D'. The intermittently operating feeder H is so timed in relation to
50 the speed of the fluxing and drying rolls D, D, D', D', as to properly coat therewith and give opportunity at the intervals between successive sheets for the oil or flux to be trans-
ferred from the surface of the upper fluxing
55 roll to the lower fluxing roll and also to give time for the heated drying rollers D' D' to drive off the moisture from their surfaces. As the wet sheets pass between the rolls the water or moisture is in part driven off by the
60 heat and in part by the pressure of the rolls upon the sheet, the water expelled by the lat-
ter or squeezing operation having free oppor-

tunity to drop down or drain off without the necessity of being evaporated by the heat or mixed with the oil or collect in the oil or flux tank. 65

I claim—

1. In a machine for drying and fluxing wet pickled sheets of iron or steel preparatory to tinning or coating the same with metal, the
70 combination with a series of heated drying and fluxing rolls having smooth surfaces between which the sheet is passed and means for heating said rolls, of a flux tank contain-
75 ing flux located above the path of the sheet between the rolls, a feed or supply roller revolving in the tank and a transfer roller revolving in contact with the feed roll and one
of the fluxing rolls, substantially as specified.

2. In a machine for drying and fluxing wet
80 pickled sheets of iron or steel preparatory to tinning or coating the same with metal, the combination with a series of heated drying and fluxing rolls having smooth surfaces be-
85 tween which the sheet is passed and means for heating said rolls, of a flux tank containing flux located above the path of the sheet between the rolls, a feed or supply roller re-
90 volving in the tank and a transfer roller revolving in contact with the feed roll and one of the fluxing rolls, a feed table and a feed
95 device for feeding the sheets to the rolls at intervals, so that the flux is applied to both the upper and lower fluxing rolls and to both the upper and lower surfaces of the sheet passing between them substantially as speci-
fied.

3. The combination in a fluxing machine of a series of heated fluxing rolls, with a flux tank containing flux, a flux feed roll and a
100 transfer roll revolving in contact with the feed roll and one of the fluxing rolls, a feed table and a feeder for delivering the sheets automatically at intervals to the fluxing rolls, so that the flux is applied to both the upper
105 and lower fluxing rolls and to both the upper and lower surfaces of the sheet passing between them substantially as specified.

4. In a machine for drying and fluxing metal sheets preparatory to tinning, the com-
110 bination with a series of fluxing rolls D, D, of a pair of drying rolls D' D', a tank B, fluxing roll F and transfer roll G, pivoted vibrating feeder arms H, feed table E and means for intermittently operating said feeder arms,
115 so that the flux is applied to both the upper and lower fluxing rolls and to both the upper and lower surfaces of the sheet passing between them substantially as specified.

EDWIN NORTON.

Witnesses:

H. M. MUNDAY,
EMMA HACK.