A. HENDERSON.

METAL SCALPING MACHINE.

APPLICATION FILED DEC. 28, 1912.

1,097,976.

Patented May 26, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

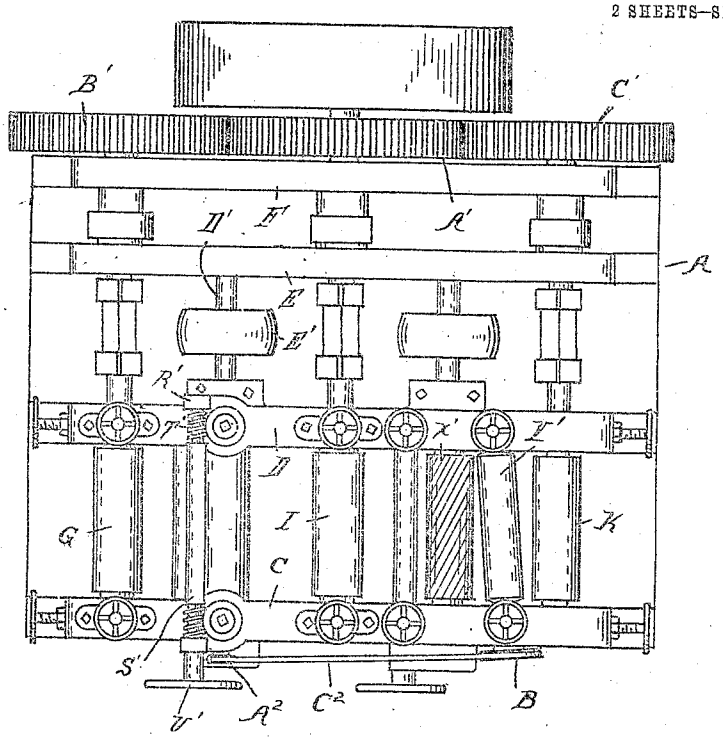
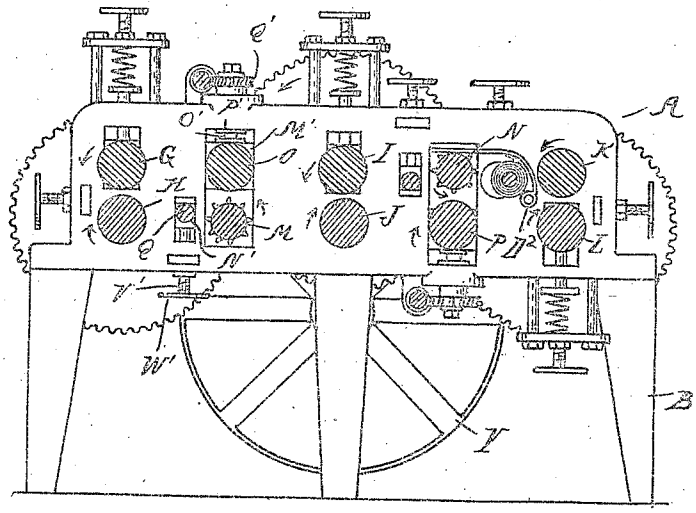


Fig. 2.



Witnesses

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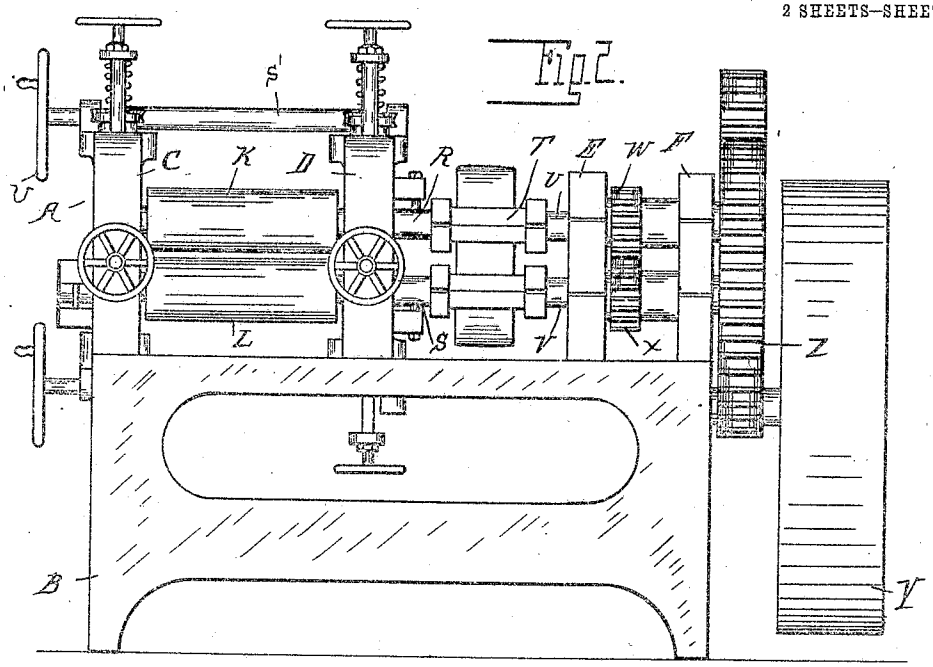
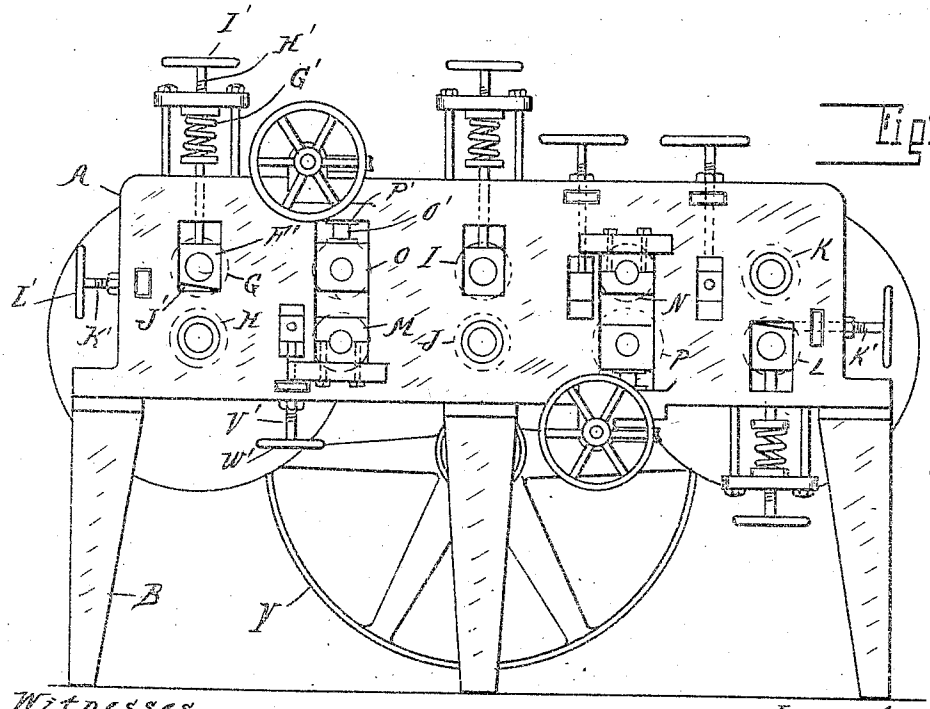


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

ALEXANDER HENDERSON, OF DETROIT, MICHIGAN, ASSIGNOR TO DETROIT COPPER AND BRASS ROLLING MILLS, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

METAL-SCALPING MACHINE.

1,097,976. Specification of Letters Patent. Patented May 26, 1914.

Application filed December 28, 1912. Serial No. 738,980.

To all whom it may concern:

Be it known that I, ALEXANDER HENDERSON, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Metal-Scalping Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to machines for scalping metal bars, slabs, castings or the like so as to remove from the faces thereof scaly or foreign substances. Thus when a casting comes from the mold the faces of the casting usually have a certain amount of sand or other impurities that are slightly embedded in the metal and unless these impurities are removed they will be worked into the metal, which would be very objectionable.

The invention therefore has among the objects thereof to provide a machine which will efficiently scalp the metal castings or the like; to provide a structure by which opposite faces of the bars, slabs or castings, will be completely scalped as they pass through the machine; and to provide a machine which may be easily and quickly adapted for various sizes of castings, etc.

Other objects of the invention will more fully hereinafter appear.

The invention resides in the novel construction, arrangement and combination of parts as will be herein described and particularly pointed out in the claims.

In the drawings,—Figure 1 is a plan view of a machine embodying the invention; Fig. 2 is an end elevation thereof; Fig. 3 is a section on the line *x*—*x* of Fig. 2; and Fig. 4 is a side elevation.

A designates the frame of the machine, mounted upon suitable legs B and having a plurality of spaced supports C D E and F extending longitudinally thereof. Arranged intermediate the supports C and D and journaled in bearings therein are a plurality of pairs of feed rolls G H, I J and K L, the several pairs being spaced from each other. Positioned below the line of feed and mounted in bearings in the members C D is a scalping roll M, and above the line of feed, intermediate the pairs of feed rolls I J and K L is a second scalping roll N.

O and P designate backing rolls for the members M N respectively.

Each of the scalping rolls is provided adjacent thereto with a work-positioning roll Q which forms a guide for regulating the amount of metal removed from the work.

The shafts R and S of each pair of feed rolls project beyond the support D and the projections of these shafts are rigidly connected as by suitable coupling members T with shafts U V alined therewith and which are suitably journaled in bearings in the supports E F.

W and X are intermeshing pinions fixed respectively to the shafts U V, and Y is the main driving pulley, the shaft of which is journaled in the support F and has thereon a main driving pinion Z.

A′ is a gear wheel fixed to the shaft U of the roll I and meshing with the gear Z.

B′ C′ are gear wheels fixed respectively to the shafts V of the rolls H and L and engaging the gear wheel A′.

The gear wheels A′ B′ C′ are of the same size and also the pinions W and X are of complementary size, thereby effecting a driving of the several pairs of feed rolls at the same speed. The members O P and Q are preferably idlers.

The shafts of the scalping rolls have extensions D′ journaled at their outer ends in the support E, and fixed to these extensions intermediate the supports D and E are driving pulleys E′ which are connected by suitable belting not shown, to any desirable source of power. Thus it will be noticed that the scalping rolls are driven independently of the drive trains for the feed rolls.

One member of each pair of the feed rolls, as G, I and L, is suitably mounted in vertical adjustable bearings F′, each bearing being yieldably pressed toward the coöperating roll by a spring G′, the tension of which may be regulated by a screw H′ provided with a hand-wheel I′. The inward limits of the bearings F′ of the rolls G and L are regulated by wedges J′, also adjustable by means of a suitable screw K′ and hand-wheel L′. If desired, the inward movement of the bearings F′ of the roll I may be similarly regulated. The bearings M′ of the backing rolls O and P, and the bearings N′ of the guide rolls Q are vertically adjustable, though not spring-pressed. As

shown, the bearings M′ have connected thereto as by a swivel joint, a rod O′ which has a screw-threaded engagement with a bearing P′ in the support and projects above the latter, the projection having fixed thereupon a worm gear Q′.

Extending laterally of the supports C and D and journaled in bearings R′ thereon, is a shaft S′ having worms T′ at opposite ends thereof intermeshing with the worm gears of the coöperating bearings M′ of the backing rolls. This shaft is provided with a hand-wheel U′ and by rotating the hand-wheel the shaft S′ will be revolved, and through the medium of the worms and worm gears, effect a simultaneous and corresponding adjustment of the coöperating bearings for the backing roll.

The bearing N′ for the guide roll Q is provided with a suitable screw V′ and hand-wheel W′ by which the guide roll may be adjusted. By lowering or raising the guide roll the amount of metal removed from the casting or other work passing through the machine, may be regulated.

The scalping rolls are provided with removable knives or blades X′ preferably arranged at an angle to the axis of the roll, and positioned beyond the scalping roll N is a rotary brush Y′ for removing from the top surface of the casting or work, any loose metal that remains after the scalping thereof. Preferably this brush is at an angle to the scalping roll. The member Y′ may be driven in any suitable manner, but I find it desirable to drive the same from the scalping roll N as by means of the pulleys A^2 B^2 and belt C^2. In order to insure a very thorough removal of all the cuttings and shavings from the casting or work, a blower pipe D^2 is positioned slightly in advance of the rotary brush Y′, the blower receiving its supply of compressed air from any suitable source.

In operation, power being supplied to the main driving pulley and the pulleys of the scalping rolls, the latter and the feed rolls are rotated in the direction of the arrows on Fig. 3. The casting, bar, slab or the like is then fed to the rolls G H, which move it forward intermediate the roll M and its backing roll O. As the casting passes across the roll M the lower face is completely scalped, since as shown in Fig. 1, the knives X′ extend from end to end of the scalping roll. The casting passes from the scalping roll M to the feed rolls I and J, which are spaced from the rolls G H a distance less than the length of the castings, bars or the like that are to be scalped, so that the second pair of feed rolls will engage the casting before the latter leaves the first pair of feed rolls. The members I J continue to feed the work forward across the member M and to the rolls N and P, where the upper face of the casting is completely scalped. The cuttings, shavings, etc., which remain upon the upper face of the casting will be removed by the rotary brush as the metal passes to the rolls K L, the finer shavings, dust, etc., being blown from the upper surface by the compressed air discharging from the pipe D^2. Thus, as will be apparent, the passage of the work through the machine is continuous and in substantially a straight line, while opposite faces of the casting or other work are properly and completely scalped in one operation.

As hereinbefore stated, by raising or lowering the guide roll Q the amount of metal-removed by the scalping roll may be regulated. Also by regulating the various feed and backing rolls the machine may be readily adapted for any size slab or casting within certain limits.

Although I have shown and described the preferred form of my invention, I do not desire to limit my protection to the structure illustrated, but consider the invention broad enough to cover various and obvious changes which might be made and which would fall within the scope of these claims.

What I claim as my invention is:—

1. In a metal scalping machine, the combination with scalping rolls upon opposite sides of the line of feed, of adjustable feed rolls operatively positioned in relation to said scalping rolls and means for limiting the adjustment of said rolls.

2. In a metal scalping machine, the combination with a pair of feed rolls, of a scalping roll above the line of feed, and a rotary brush positioned beyond the scalping roll above the line of feed and arranged at an angle to said scalping rolls, for the purpose described.

3. In a metal scalping machine, the combination with feed rolls, of a scalping roll arranged above the line of feed, a brush movable across the line of feed and beyond the scalping roll, and a blower positioned in operative relation to the brush.

4. In a metal scalping machine, the combination with a plurality of feed rolls, spring-pressed bearings for one roll of each pair, screws for regulating the tension of said spring pressed bearings, complementary scalping rolls alternating with the feed rolls and arranged upon opposite sides of the line of feed, a backing roll for each scalping roll, means for effecting an adjustment of each of the backing rolls in relation to its scalping roll, and adjustable guide rolls positioned in proximity to the scalping roll.

5. In a metal scalping machine, the combination with a frame, having a plurality of spaced supports extending longitudinally thereof, a plurality of pairs of feed rolls journaled in two of said supports, complementary scalping rolls alternating with the

feed rolls and arranged respectively upon opposite sides of the line of feed also journaled in the last-mentioned supports, the shafts of said scalping rolls having extensions, driving members fixed to said extensions, the shafts of the feed rolls of the several pairs having extensions journaled in other longitudinally extending supports, intermeshing gears on the extensions of the shafts of each pair of feed rolls, intermeshing gear wheels fixed to said extensions, a drive pulley, and a pinion fixed to rotate therewith intermeshing with one of said gear wheels.

6. In a metal scalping machine, the combination with a frame, of a plurality of supports extending longitudinally thereof, a series of spaced pairs of feed rolls journaled in the supports, scalping rolls arranged upon opposite sides of the line of feed, the shafts of said feed rolls having extensions, intermeshing gears mounted on said extensions, a drive pulley, a pinion fixed to rotate therewith, and intermeshing with one of said gears.

7. In a metal scalping machine, the combination with a pair of feed rolls, a scalping roll above the line of feed, and a rotary brush positioned beyond the scalping roll above the line of feed.

8. In a metal scalping machine, the combination with a frame, of a plurality of supports extending longitudinally thereof, a series of spaced pairs of feed rolls journaled in the supports, scalping rolls arranged upon the opposite sides of the line of feed, a rotary brush arranged above the line of feed and extending transversely thereto, means for driving said scalping rolls, gearing connecting the feed rolls of each pair, a drive connection between the several pairs, for rotating the members thereof at the same speed, and means for actuating said drive connection.

9. In a metal scalping machine, the combination with scalping mechanism, of a pair of feed rolls, spring pressing means for one of said rolls, and adjustable means for limiting the inward movement of the movable roll.

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

ALEXANDER HENDERSON.

Witnesses:

A. K. WELLINGTON,

J. E. WORKMAN.