

No. 884,313.

PATENTED APR. 7, 1908.

W. H. CARPENTER.  
MACHINE FOR SCOURING SHEET METAL.

APPLICATION FILED FEB. 5, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

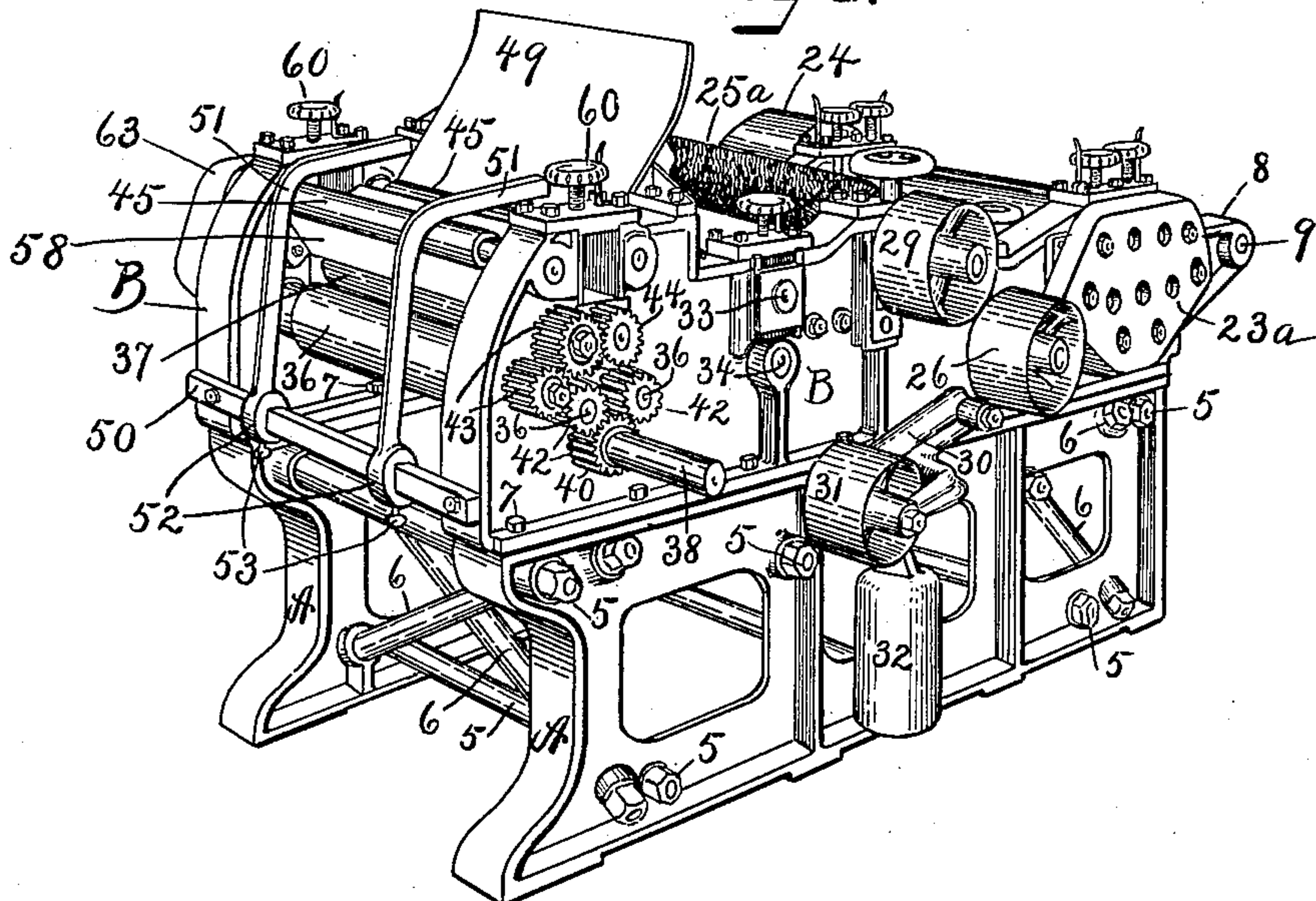
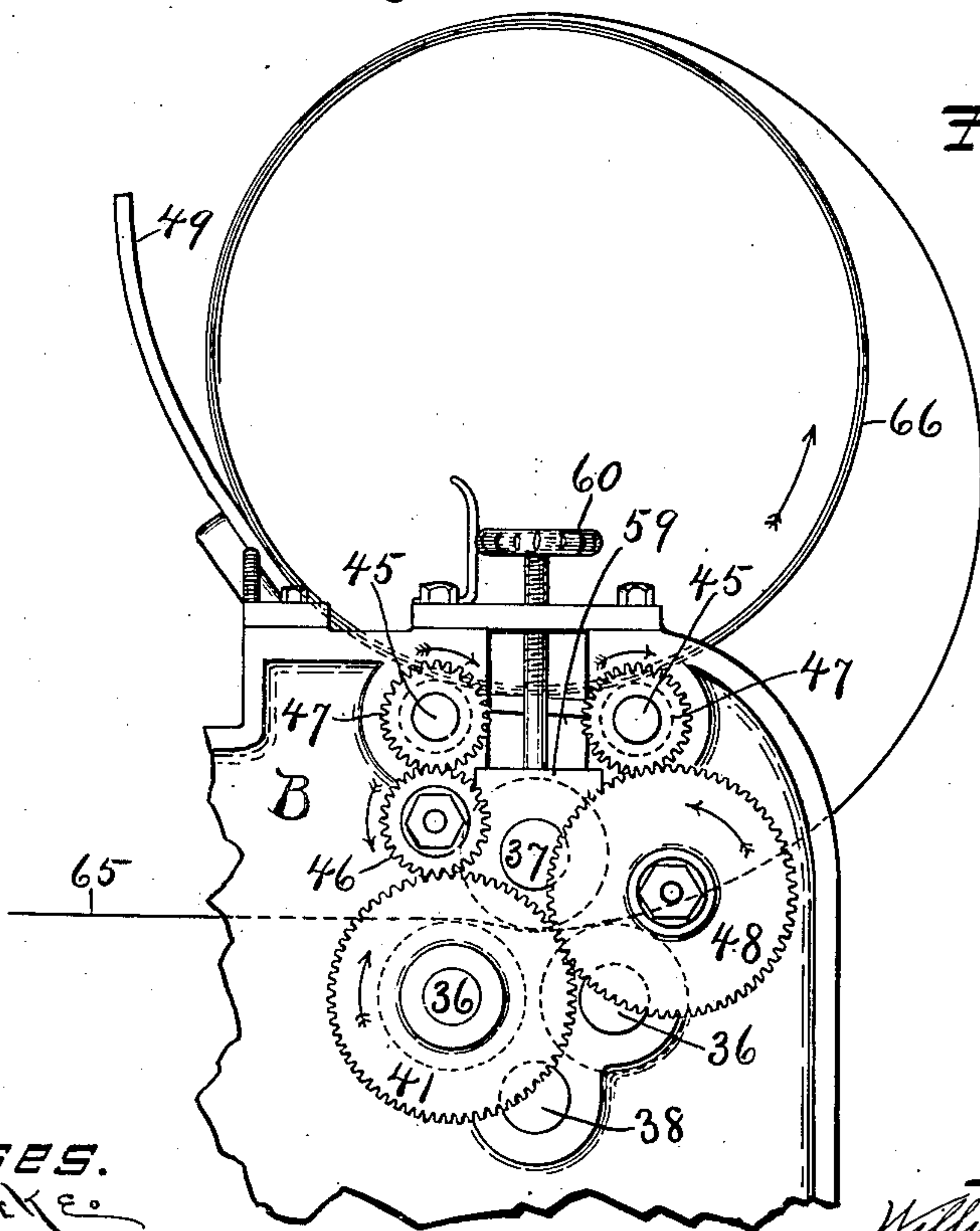


Fig. 2.



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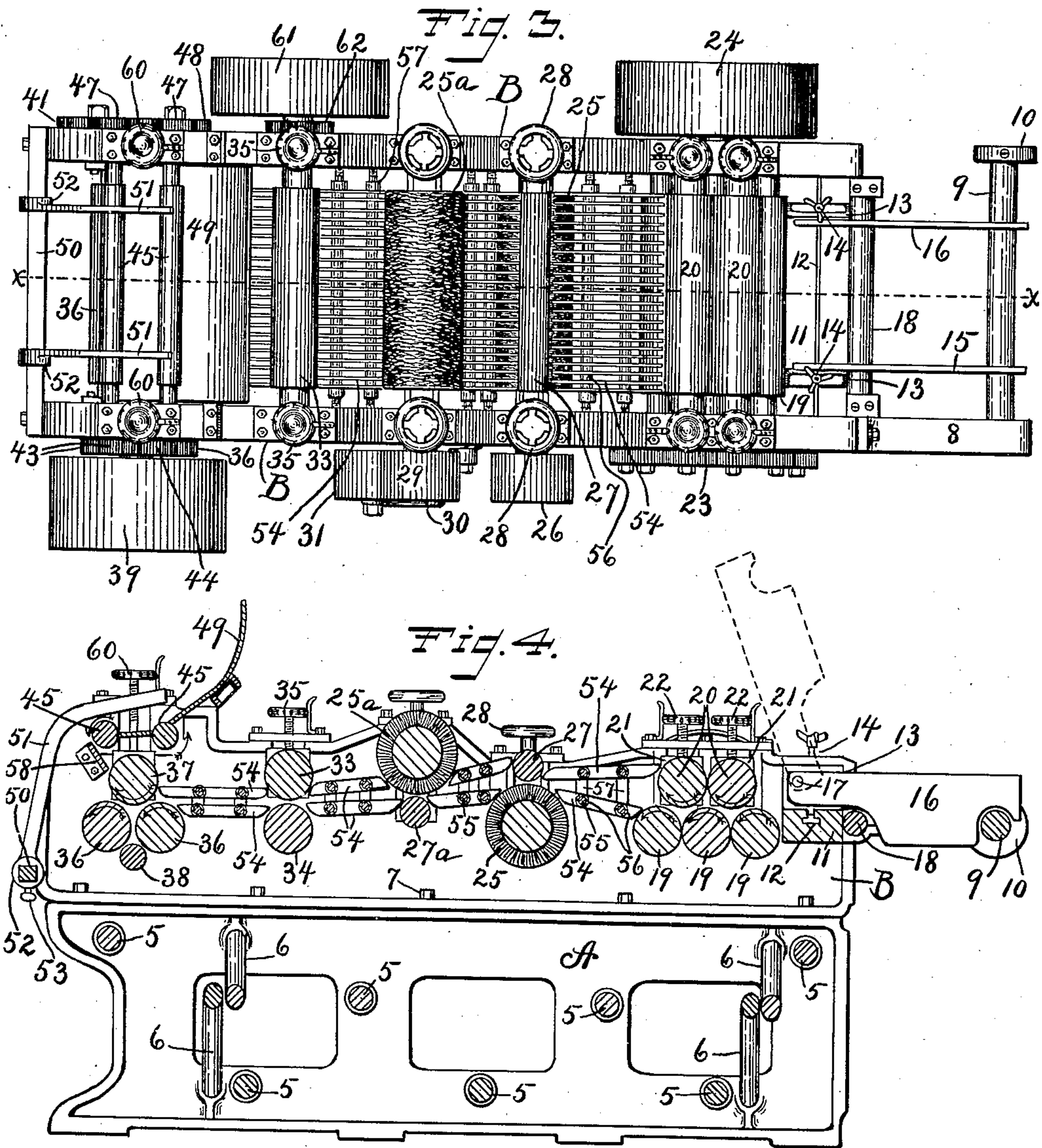
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# UNITED STATES PATENT OFFICE.

WILLIAM H. CARPENTER, OF BRISTOL, CONNECTICUT, ASSIGNOR TO BRISTOL BRASS COMPANY, OF BRISTOL, CONNECTICUT, A CORPORATION.

## MACHINE FOR SCOURING SHEET METAL.

No. 884,313.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed February 5, 1907. Serial No. 355,885.

*To all whom it may concern:*

Be it known that I, WILLIAM H. CARPENTER, a citizen of the United States, residing at Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in a Machine for Scouring Sheet Metal, of which the following is a specification.

My invention relates to machines for scouring sheet metal and the objects of my improvements are simplicity and economy in construction, and convenience and efficiency in operation, particularly with reference to scouring and washing the metal and coiling it into a roll at the delivery end of the machine.

In the accompanying drawing:—Figure 1 is a perspective view of my machine, showing the delivery end and one side, the top cover and a part of the housing for the gears being removed. Fig. 2 is an enlarged side elevation of a portion of the delivery end of the machine, together with a sheet of metal passing therethrough and showing that side of the machine that is out of view in Fig. 1. Fig. 3 is a plan view of the machine on a smaller scale than Fig. 2, the housings for the gears being removed. Fig. 4, is a longitudinal section of the same on line *x x* of Fig. 3.

A, A, designates the two sides of the sub-frame or legs which are connected together by suitable cross rods 5 and brace rods 6 in any ordinary manner. The two sides B, B, of the main frame are placed on the top of the sub-frame and secured thereto in any proper manner, as for example by the bolts 7.

At the front end of the machine, (the right hand end as shown in Figs. 1 3 and 4,) a bracket 8 is secured to one of the sides B and a bracket arm 9 having a head 10 is secured to the said bracket with the bracket arm 9 standing parallel to the end of the frame and at some little distance therefrom.

Between the sides B, B, near their ends is a cross bed 11 having a T shaped groove 12 extending longitudinally through it, the said bed and groove forming suitable ways for the guard brackets 13 to slide upon longitudinally of the said cross bed, whereby the said guard brackets may be adjusted to any desired position on the cross bed and held in their adjusted position by means of ordinary bolts and nuts, as for example the bolts 14.

The guard bracket nearest the bracket 8

has a guard plate 15 rigidly secured to its inner face, the said plate extending outwardly as far as the bracket arm 9 or a little beyond said arm. A similar guard plate 16 is pivoted by one corner as at 17, to the other guard bracket and extends outwardly in the same manner. This swinging or pivoted guard plate may be turned upwardly out of the way as indicated by broken lines in Fig. 4, or may be turned down into position for use as shown by full lines in Figs. 3 and 4. In front of, that is outside of the cross bed, there is a friction roller 18 loosely mounted in any suitable bearings and extending transversely to the machine in a position parallel to the bracket arm 9.

Adjacent to the cross bed there is a gang of five rollers that constitute an ordinary straightener. There are three lower rollers 19 and two upper rollers 20, the latter being adjustable vertically in the ordinary manner of adjusting such rollers, that is to say by mounting them in sliding boxes 21 provided with adjusting screws 22. A gang of gears 23, Fig. 3, connects and drives these rollers so that their confronting faces all travel in the same direction towards the delivery end of the machine as indicated by the darts in Fig. 4. In Fig. 1, this gang of gears is covered by the housing 23<sup>a</sup>. The several rollers forming the straightener are driven by means of a pulley 24, mounted on the end of the central one of the lower rollers 19, and on that end which is opposite the gang of gears 23.

A roller brush 25, preferably a wire brush, is provided with a driving pulley 26 at one end and above the said brush is a presser roll 27 made vertically adjustable in any ordinary manner, as for example by means of adjusting screws 28 connected with the boxes in which the said roller is mounted, all in the ordinary manner of adjusting similar rolls. A second roller brush 25<sup>a</sup> with a presser roll 27<sup>a</sup> underneath it is adjustably mounted in the frame, nearer the delivery end of the machine than is the brush 25 and roll 27. The roller brush 25<sup>a</sup> is also provided with a driving pulley 29. On the same side of the frame as the pulleys 26 and 29, there is a swinging frame 30, having a pulley 31 mounted in its outer end and carrying a weight 32, whereby both pulleys 26 and 29 may be driven by one belt passing around the said three pulleys, the idle pulley 31 and weighted frame serving to keep the belt taut on the pulleys 26 and 29.



At another point in the frame still nearer the delivery end, a pair of feed rollers are mounted, the upper feed roller 33 being adjustably mounted to move to and from the lower feed roller 34 by means of the adjusting screws 35 in the ordinary manner of adjusting similar rollers. The lower feed roller 34 is provided with a driving pulley 61, and the two feed rollers are connected by ordinary gears 62. At the delivery end of the machine there is a set of three forming or coiling rollers, consisting of two lower rollers 36 and a centrally arranged upper roller 37. The roller 37 is vertically adjustable by means of sliding boxes 59 and ordinary adjusting screws 60. These rollers are driven by the driving shaft 38 having a pulley 39 and gear 40 at one end, and a gear 41 at the opposite end for a purpose hereinafter described. In Fig. 1 the pulley 39 is removed in order to show the gearing. The gear 40 engages and drives gears 42 on the ends of the lower rollers 36 as shown in Fig. 1, while one of the gears 42 drives the upper roller 37 by means of the two idle or intermediate gears 43, and gear 44 fixed on the end of the said upper roller. A little above the coiling rollers 36—37 there are two live rollers 45, that form a support for a coil or roll of metal. These are so geared that their upper surface travels in the same direction as the opposing surfaces of the coiling rollers, that is towards the delivery end of the machine. They are so driven by means of the gear 41 on the driving shaft 38, which gear 41 engages and drives the intermediate gear 46 for driving the gear 47 fixed on the end of one of the live rollers 45, while the same gear 41 on shaft 38 also engages and drives another intermediate gear 48 for driving the gear 47 that is fixed on the end of the other one of the live rollers 45 as shown in Fig. 2. The gears shown in Fig. 2 are covered in Fig. 1 by the housing 63. Adjacent to the coil supporting rollers there is a curved apron or guard 49 fixed on the frame and curving downwardly and outwardly towards the top of the coil supporting rollers. At this end of the machine there is a cross bar 50 upon which is mounted a pair of guides 51 extending upwardly to and over the upper side of the coil supporting rollers. The lower ends of the guides 51 have heads or eyes 52 that are fitted to the cross bar so that they may be adjusted thereon to and from each other and held in their adjusted position by means of the set screws 53.

Upper and lower skeleton or gridiron guides are arranged between the straightening rollers and the first roller brush, between the two roller brushes, between the second roller brush and the feed rollers and between the feed rollers and the coiling rollers. These guides are preferably formed of bars or slats 54, rods 55, and washers or spacing blocks 56, the slats and blocks being per-

forated so that the slats and blocks may be supported on the rods with the blocks between the respective slats, as shown in Figs. 3, and 4. The ends of the upper and lower rods for the guides may be connected by means of the tie bars 57 and the ends of either the upper or lower rods may be connected with the sides of the frame in any proper and ordinary manner. A cross guard 58 is placed at the delivery end of the machine just under the outer one of the coil supporting or live rollers 45, so as to prevent the end of a sheet of metal delivered from the coiling rollers from passing inwardly under the rollers 45. The driving pulleys for the straightener, the brushing rollers, the feed rollers and the coiling rollers, are driven by separate belts. For use, the guides 15 and 16 at one end of the machine and the guides 51 at the opposite end are set the proper distance from each other according to the width of the sheet of metal to be scoured. They are also so set that the spaces between them at both ends of the machine are in substantially longitudinal alinement. The guide plate 16 is turned up out of the way as indicated by broken lines in Fig. 4, and a coil or roll of sheet metal, fresh from the pickle, is slipped over the end of and upon the bracket arm 9, with one edge of the metal against the fixed guide plate 15. The other guide plate 16 is then turned down into the position shown by full lines in Fig. 4 so as to come closely to and opposite the other edge of the metal, or in other words, opposite the other end of the coil of metal. The operator then enters the end of the coiled sheet in between the straightening rollers which not only flatten and straighten the metal but carry it along between the guide slats 54 so as to direct the end over the first brushing roller 25 and under the presser roller 27, for acting upon one side of the metal. Water may be distributed or applied freely to the metal as it reaches the brushing rollers and the purpose of making the guides in skeleton form is to facilitate the application of water thereto. The metal passes from the first brushing roller to the second going under it and over the presser roll so as to have the two brushing rollers act upon the opposite sides of the metal. From the second brushing rollers the feed rollers take the metal and draw it along with a tendency to pull on the metal and help to keep it in contact with the brushing rollers. From the feed rollers the metal passes between the forming and coiling rollers which act to again coil the metal into a roll. The metal 65, Fig. 2, comes out from the coiling rollers, passes upwardly between the two guides 51 and is rolled into a coil or roll 66 as shown, the said roll 66 resting on the coil supporting rollers 45 which are so geared as to move in unison therewith. As the last end of the sheet



comes through the coiling rollers the roll 66 is driven by the live rollers 45 upon which the coil is supported and the loose end is drawn up and the roll will continue to revolve on the rollers 45 until the operator is ready to remove it, and there is no danger of its falling off or causing any inconvenience.

While I have shown the coiling and coil supporting rollers in a machine for scouring metal it is evident that their construction and action would be the same when placed at the delivery end of any machine for acting on sheet metal. By employing a straightener to precede the action of the roller brushes, the metal will be leveled up so that the brushes will act to the best advantage thereon. By means of the skeleton or gridiron guides, water can be freely applied to the metal for cleaning or washing it as it passes through the machine.

I claim as my invention:—

1. A machine for scouring sheet metal, comprising the frame with a bracket 8 secured to one of the sides of the frame and projecting from one end thereof, a coil supporting bracket arm 9 secured to the said bracket and extending laterally at a distance from the end of the frame and parallel to the said end, and a pair of guide plates supported on the frame, the guide plate farthest from the bracket 8 being hinged to its support for being turned down upon the bracket arm or turned up out of the way.

2. A machine for scouring sheet metal, comprising a set of straightening rollers, with a roller brush and presser roller above the same, a second roller brush and presser roller below the same, and a pair of feed rollers for drawing the metal from the roller brush.

3. A machine for scouring sheet metal, comprising a set of straightening rollers, with a roller brush for acting upon one side of the metal, a second roller brush in a different vertical plane, for acting upon the other side of the metal, a pair of feed rollers for drawing the metal from the roller brushes, and a set of coiling rollers following the action of the feed rollers.

4. A machine for scouring sheet metal, comprising a set of straightening rollers, with a roller brush for acting upon one side of the metal, a second roller brush for acting upon the other side of the metal, a pair of feed rollers for drawing the metal from the roller brushes and upper and lower guides between the straightening rollers and first roller brush, between the first and second roller brushes and between the second roller brush and the feed rollers.

5. A machine for scouring sheet metal, comprising a roller brush for acting upon one side of the metal, a roller brush for acting upon the other side of the metal, a presser device in connection with each roller brush for holding the metal against the said brush, and upper and lower guides of a skeleton form fixed in front of the first roller brush and presser device and between the first and second roller brushes and presser devices.

6. A machine for scouring sheet metal, comprising a set of straightening rollers, with roller brushes for acting on opposite sides of the metal, a pair of feed rollers for drawing the metal from the roller brushes and separate driving drums of the pulleys for the straightening rollers, the roller brushes and the feed rollers.

7. A machine for scouring sheet metal, comprising the guide plates 15 and 16 adjustably mounted for setting them at different distances from each other, with the straightening rollers, roller brushes for acting upon the opposite sides of the metal, a pair of feed rollers following the action of the roller brushes, a set of coiling rollers and a pair of guides adjustably mounted at the delivery of the coiling rollers for setting the said guides at different distances from each other corresponding to that of the guide plates at the other end of the machine.

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Witnesses:

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