

Aug. 25, 1931.

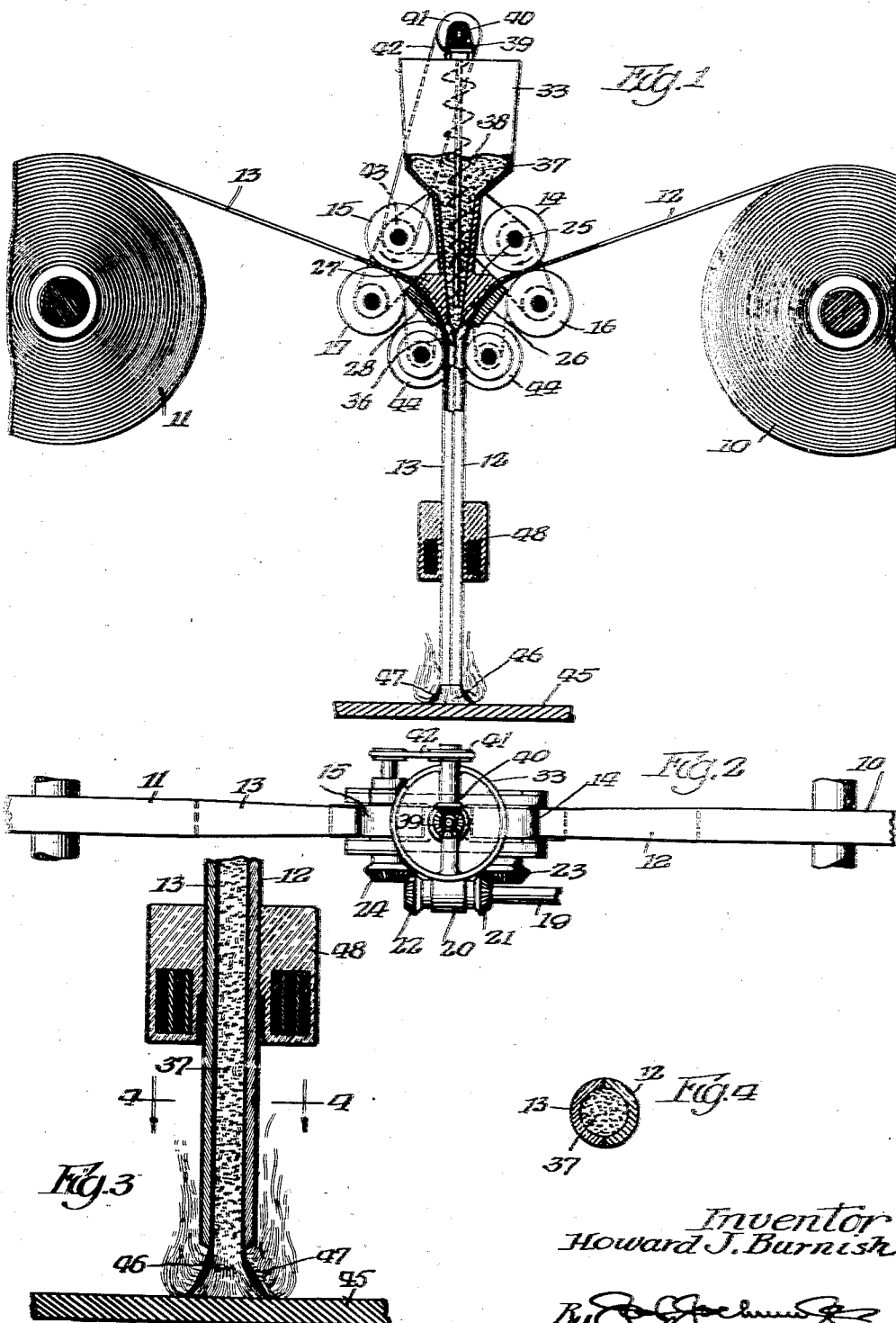
H. J. BURNISH

1,820,649

MEANS AND METHOD OF FORMING AND FEEDING WELDDROPS

Filed May 8, 1930

2 Sheets-Sheet 1



Inventor
Howard J. Burnish

By *[Signature]*
Attorney

Aug. 25, 1931.

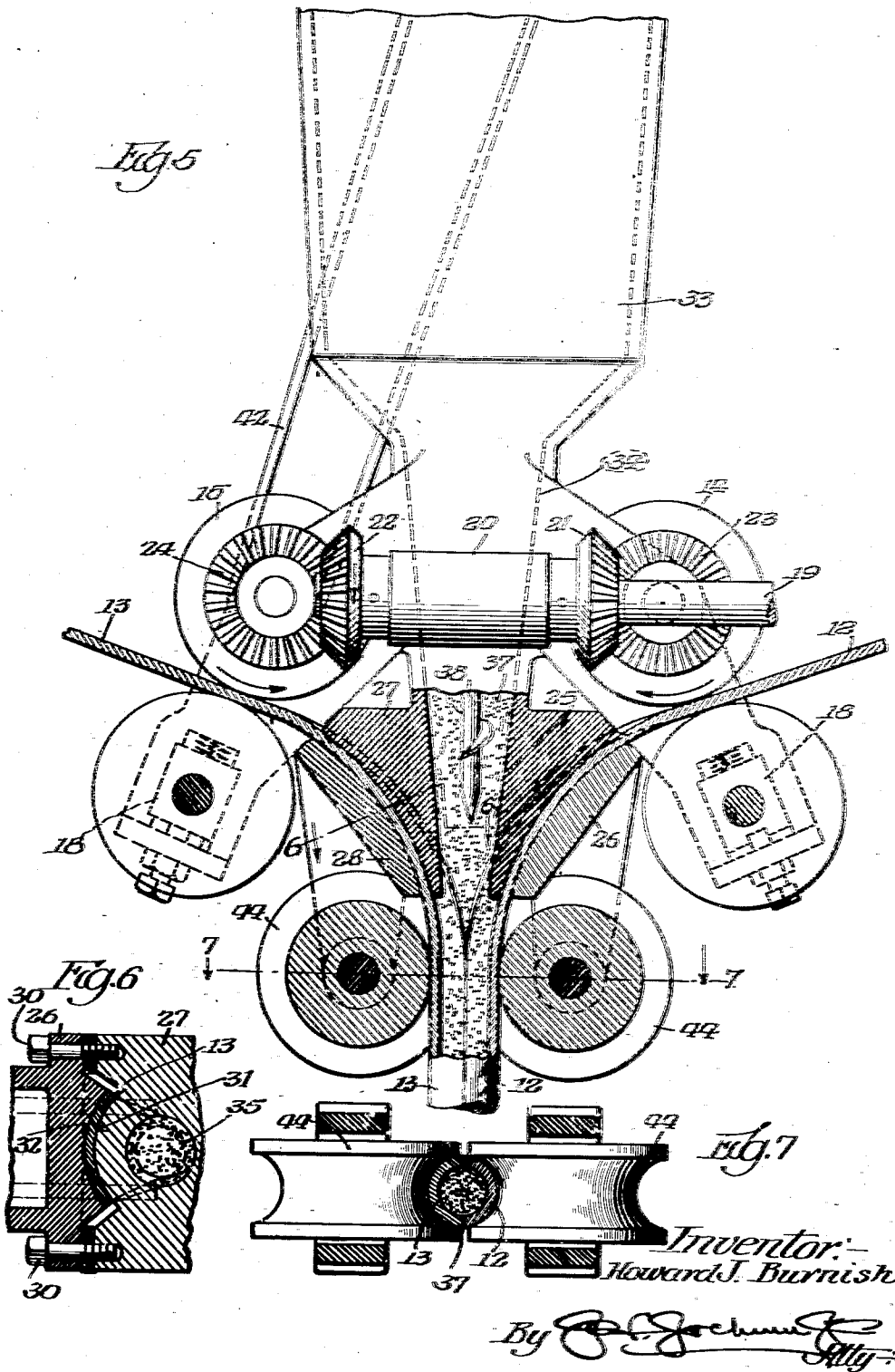
H. J. BURNISH

1,820,649

MEANS AND METHOD OF FORMING AND FEEDING WELDRODS

Filed May 8, 1930

2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

HOWARD J. BURNISH, OF MILWAUKEE, WISCONSIN

MEANS AND METHOD OF FORMING AND FEEDING WELDRODS

Application filed May 8, 1930. Serial No. 450,848.

This invention relates to improvements in welding rod or wire and method of making the same, and has more particular reference to the type of rod or wire in which the same is formed as an enclosing shell or casing into which the fluxing material is inserted during the formation of the rod, and during the process of feeding the completed structure to the work.

10 A further object is to provide improved means for feeding two strips of material together, preferably from reels into shaping mechanism to form semi-circular members which are brought together to provide
15 a hollow casing, the fluxing material being delivered between the members and into the casing either by gravity or forced feed, while the casing members are being assembled, and then feeding the completed
20 structure to the work directly as it is formed.

A further object is to provide improved means for heat treating the material constituting the core or flux to partially reduce the same and thereby tending to solidify the material by removing moisture and prepare the flux to burn consistently.

To the attainment of these ends and the accomplishment of other new and useful
30 objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown
35 in the accompanying drawings illustrating this invention, and in which

Figure 1 is a diagrammatic view, partly in elevation and partly in section, of mechanism of this character constructed in accordance with the principles of this invention.

Figure 2 is a top plan view of Figure 1.

Figure 3 is an enlarged detail sectional view of one end of the welding rod showing the means for heat treating the same.

Figure 4 is a detail sectional view taken on line 4—4, Figure 3.

Figure 5 is an enlarged detail view, partly
50 in elevation and partly in section, of the

shaping mechanism and the means for feeding the flux into the structure.

Figure 6 is a detail sectional view taken on line 6—6, Figure 5.

Figure 7 is a detail sectional view taken
55 on line 7—7, Figure 5.

Referring more particularly to the drawings the numerals 10 and 11 designate two reels upon which are wound strips of material 12 and 13 from which the outer casing of the wire or rod is to be formed. The strips of material are fed towards each other by means of feeding rolls 14—15 which co-operate respectively with rolls 16—17, the latter being preferably mounted in adjustable bearings 18 by means of which the rolls 16—17 may be respectively adjusted toward or away from the rolls 14—15 to compensate varying thicknesses of the material being used.

The feeding rolls 14—15 are adapted to be rotated in any desired or suitable manner preferably from a shaft 19 which is rotated from any suitable source of power (not shown). This shaft is journaled in a suitable bearing 20 and has connected with it gear wheels 21—22 preferably of the beveled type, which mesh respectively with gear wheels 23—24 secured respectively to the feeding rolls 14 and 15.

The gears 21—22 are so arranged with respect to the gears 23—24 as to cause the rolls 14—15 to rotate towards each other as indicated by the arrows in Figure 1.

Co-operating pairs of guides or forming shoes 25—26 and 27—28 are provided preferably adjacent the respective feeding rolls 14—15 to receive the respective strips 12 and 13 therebetween and to shape the strips into semi-circular formations as shown more clearly in Figure 7.

The shoes or guides 26—28 are adjustably mounted with respect to the co-operating shoes or guides 25—27 in any suitable manner such as by means of adjusting screws 30 and the co-operating faces 31—32 of the respective shoes may be of any desired configuration to produce the desired shape to the strips 12—13.

Supported in any suitable manner is a

hopper 33 provided with a discharge outlet 34, the extremity 35 of which outlet is disposed at a point approximately in close proximity to the outlet end of the co-operating shoes 25—26—27—28, and the end of the outlet chute is provided with a shoulder 36, for a purpose to be set forth.

The fluxing material 37 is arranged within the hopper 33 and may be fed by gravity between the shaped strips 12 and 13 or by a forced feed. If desired a conveyor or feeding member 38 is arranged within the hopper 33 and the discharge outlet portion 35 and is preferably in the form of a spiral which operates as an agitator and as a means for forcing the material from the hopper. This element 38 is rotatably supported in any suitable manner and is adapted to be rotated preferably by means of a gear 39 which meshes with a gear 40, and the latter is secured to a pulley 41 for rotation therewith.

Passing over the pulley 41 is an endless flexible member 42 which also passes over a pulley 43 that is connected with the feed roll 15 for rotation therewith so that when the feed roll 15 is rotated motion will be communicated through the belt 42 to the pulley 41 and thereby rotate the feeder or agitator 38.

The shoulder 36 serves as a means for preventing the fluxing material from retrograde movement when forced between the members by the agitator or feeding member.

The members 12 and 13 after they are shaped pass between co-operating rollers 44 which are preferably rotated by the engagement of the strips 12 and 13 therewith. After the strips have been shaped the proximate edges are brought in close proximity to each other and when passing between the rollers 44 these edges will be forced together to form a hollow casing and the fluxing material is fed into the casing as the strips are forced together.

These rollers 44 are preferably arranged in proximity to the surface 45 upon which the work is to be performed so that when the rod or wire is formed it will be fed directly to the work and the rollers 44 prevent the strips 12 and 13 forming the rod, from separation.

In operation, the arc 46 produced between the end of the rod and the work 45 will operate to fuse the rod or wire sections together and in the burning or consumption of the rod or wire during the working operation, the center mass liberates beneficial gas to act as a blanket around the arc as indicated at 47, as well as various elements causing the same, in the center mass, to become alloyed with the deposit upon the work.

Furthermore, the smudge or smoke produced by partial combustion of the flux core or center ingredient 37 will flow through a

metallic spray stream between the end of the rod or wire and the work in order to reach the atmosphere. In passing through such a stream the gases are further reduced and through this process the metallic spray stream between the rod and work will be purified, so to speak, resulting in a more homogeneous metallic deposit on the work, and overcomes an outstanding difficulty in obtaining a clean weld.

If desired a heater 48 may be provided, preferably of the type through which the rod or wire as it is formed passes, after it leaves the rolls 44 and before the extremity thereof is brought into contact with the work, with the result that the material constituting the core or flux may be heated to expel moisture therefrom and partially dehydrate the same, thereby tending to solidify the material and prepare the flux to burn consistently.

With this invention it will be manifest that a composite rod or wire is produced by feeding separate strips of material continuously towards each other to place their lateral faces in proximity to each other, during which feeding movement the rods will be shaped so that when brought together they will form a hollow casing into which the fluxing material is fed, the completed rod being fed to the work directly it is formed.

With this invention also it will be manifest that it is not necessary to secure the rod or wire sections together as the heat of the arc will tend to flux the same to a certain extent and this in combination with the holding rollers will prevent the rod sections from becoming separated.

This will obviate the necessity of forming the rods or wires in predetermined lengths and at the same time will produce mechanism for continuously producing and feeding the rod or wire to the work directly it is formed.

While the preferred form of the invention has been herein shown and described, it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts, within the scope of the claims, without departing from the spirit of this invention.

What is claimed as new is:—

1. In a welding rod forming and feeding machine, means for shaping two strips of material and feeding them together to provide a hollow enclosing casing, and means for feeding fluxing material into said casing as the latter is formed to provide a composite welding rod, said rod being supplied to the work directly it is formed.

2. In a welding rod forming and feeding machine, means for shaping two strips of material and feeding them together to pro-

vide a hollow enclosing casing, means for feeding fluxing material into said casing as the latter is formed to provide a composite welding rod, said rod being supplied to the work directly it is formed, and means for heat treating the rod to remove moisture from the flux.

3. In a welding rod forming and feeding machine, means for feeding two strips of material, shaping them and placing them together to provide a hollow enclosing casing, means for placing a fluxing material between said members directly they are formed and into the casing, the completed rod being fed to the work directly it is formed.

4. In a welding rod forming and feeding machine, means for feeding two strips of material, shaping them and pressing them laterally against each other to form a hollow casing, and means for feeding fluxing material between said members after they are shaped and as they are being forced together laterally, to produce a composite welding rod, the said rod being fed to the work directly it is formed.

5. In a welding rod forming and feeding machine, means for feeding two strips of material, shaping them and pressing them laterally against each other to form a hollow casing, means for feeding fluxing material between said members after they are shaped and as they are being forced together laterally, to produce a composite welding rod, the said rod being fed to the work directly it is formed, and means for heat treating the rod to expel moisture from the fluxing material as the rod is being fed to the work.

6. In a welding rod forming and feeding machine, means for feeding two strips of material, shaping them and pressing them laterally against each other to form a hollow casing, means for feeding fluxing material between said members after they are shaped and as they are being forced together laterally, to produce a composite welding rod, the said rod being fed to the work directly it is formed, and means whereby the parts of the shaping means may be relatively adjusted to compensate different thicknesses of the material from which the rod is formed.

7. In a welding rod forming and feeding machine, means for feeding two strips of material to gradually place their lateral faces in close proximity to each other, means for shaping the strips as they are being fed, to form when assembled a hollow casing, means for pressing said members together, and means for feeding fluxing material into the casing thus formed to produce a composite welding rod, the said rod being fed to the work directly it is formed.

8. In a welding rod forming and feeding

machine, means for feeding two strips of material to gradually place their lateral faces in close proximity to each other, means for shaping the strips as they are being fed, to form when assembled a hollow casing, means for pressing said members together, and means for feeding fluxing material into the casing thus formed to produce a composite welding rod, the said rod being fed to the work directly it is formed, the arc formed between the rod and the work serving to fuse the parts of the rod together.

9. In a welding rod forming and feeding machine, means for feeding two strips of material to gradually place their lateral faces in close proximity to each other, means for shaping the strips as they are being fed, to form when assembled a hollow casing, means for pressing said members together, means for feeding fluxing material into the casing thus formed to produce a composite welding rod, the said rod being fed to the work directly it is formed, and means for heat treating the rod to expel moisture from the fluxing material, the arc formed between the work and the work serving to fuse the parts of the rod together.

10. In a welding rod forming and feeding machine, means for continuously feeding two strips of material to gradually place their lateral faces in close proximity to each other, means for shaping the strips as they are being fed, to form when assembled a hollow casing, means for pressing said members together, and means for feeding fluxing material into the casing thus formed to produce a composite welding rod, the said rod being fed to the work directly it is formed.

11. In a welding rod forming and feeding machine, means for continuously feeding two strips of material to gradually place their lateral faces in close proximity to each other, means for shaping the strips as they are being fed, to form when assembled a hollow casing, means for pressing said members together, and means for continuously feeding fluxing material into the casing thus formed to produce a composite welding rod, the said rod being fed to the work directly it is formed.

12. The method of continuously forming composite welding rods which consists in feeding the rod material from separate supplies to place their lateral faces in close proximity, shaping the supplies to cause the component parts of the rod when assembled to form a hollow casing, feeding fluxing material into the casing as it is being formed, then pressing the component parts of the rod together to cause their lateral faces to contact, and then feeding the rod to the work directly it is formed.

13. The method of forming welding rods or wire which consists in shaping and continuously feeding two strips of material to-

wards each other with their lateral faces in close proximity, forcing the members together, supplying fluxing material between the members as they are forced together, and
5 heat treating the rod as it is formed to expel moisture from the fluxing material.

14. In a welding rod forming and feeding machine, means for forming the rod material into a hollow enclosing casing, and
20 means for feeding fluxing material into said casing as the latter is formed to provide a composite welding rod, said composite rod being supplied to the work directly it is formed.

15 In testimony whereof I have signed my name to this specification, on this 19th day of April, A. D. 1930.

HOWARD J. BURNISH.

20

25

30

35

40

45

50

55

60

65